

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5046	((210/635,656,198.2) or (426/425,429,430)).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/05/04 14:47
L2	495	l1 and peptide?	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 14:48
L3	4	l1 and peptide? and (cocoa or chocolate)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 14:49
L4	0	l1 and peptide? and (cacao)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 14:49
S1	54687	cocoa or chocolate	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 14:47
S2	11259	S1 and peptide	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:06
S3	1853	S1 and peptide and (flavor or flavour)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:12
S4	584	S3 and trifluoroacetic	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:08

S5	538	S3 and trifluoroacetic and acetic	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:08
S6	323	S3 and trifluoroacetic and acetic and hplc	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:10
S7	137	S3 and trifluoroacetic and acetic and (vicilin or albumin)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:10
S8	8	S1 and peptide near (flavor or flavour)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:17
S9	7856	(530/324,327-330).CCLS.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/05/04 11:18
S10	417	S9 and (cocoa or chocolate)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:18
S11	1	S9 and (cocoa or chocolate) same (flavor or flavour)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 11:18
S12	0	proteinase adj treatment adj2 cocoa	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/04 13:56

S13	9	((("2835590") or ("2815834"))).PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/05/04 13:57
S14	8	((("2835590") or ("2816834"))).PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/05/04 13:57

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SINCE FILE ENTRY	TOTAL SESSION
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FILE LAST UPDATED: 3 MAY 2005 <20050503/UP>  
FILE COVERS 1969 TO DATE.

=>

=> s cocoa or chocolate  
5161 COCOA  
7764 CHOCOLATE  
L1 10873 COCOA OR CHOCOLATE

=> s l1 and flavor  
3573 FLAVOR  
L2 108 L1 AND FLAVOR

=> s flavor or flavour  
3573 FLAVOR  
41651 FLAVOUR  
L3 42334 FLAVOR OR FLAVOUR

=> s l1 and l3  
L4 1282 L1 AND L3

=> s peptide or peptides  
4016 PEPTIDE  
5060 PEPTIDES  
L5 7421 PEPTIDE OR PEPTIDES

=> s l4 and l5  
L6 24 L4 AND L5

=> s l3 and l5  
L7 711 L3 AND L5

=> s l7 and trifluoroacetic  
297 TRIFLUOROACETIC  
L8 2 L7 AND TRIFLUOROACETIC

=> d l8 all 1-2

L8 ANSWER 1 OF 2 FSTA COPYRIGHT 2005 IFIS on STN  
AN 2000(04):A0512 FSTA  
TI Short-chain **peptide** analysis by high-performance liquid chromatography coupled to electrospray ionization mass spectrometer after derivatization with 9-fluorenylmethyl chloroformate.  
AU Gartenmann, K.; Kochhar, S.  
CS Correspondence (Reprint) address, S. Kochhar, Nestle Res. Cent., PO Box 44, Vers-chez-les-Blanc, CH-1000 Lausanne 26, Switzerland. Tel. +41 21 7859336. Fax +41 21 7858925. E-mail sunil.kochhar(a)rdls.nestle.com  
SO Journal of Agricultural and Food Chemistry, (1999), 47 (12) 5068-5071, 10 ref.  
ISSN: 0021-8561  
DT Journal  
LA English  
AB Isolation and characterization of short-chain **peptides** may identify **peptides** with potential for use as **flavour**

compounds, as well as allow a better understanding of the Maillard chemistry of **peptides**, and **flavour** and aroma generation in food. In this study, resolution and characterization of short-chain **peptides** (M.sub.r = 200-1000) and free amino acids were demonstrated using precolumn derivatization with 9-fluorenylmethyl chloroformate (Fmoc) followed by reverse-phase HPLC interfaced with electrospray ionization MS. At pH 10, in addition to derivatization at the N terminus,  $\epsilon$ -NH.sub.2 and OH groups of lysine and tyrosine residues, respectively, were also derivatized. Fmoc derivatives showed at least 2 orders of magnitude higher ionization potential in the presence of **trifluoroacetic acid**. Detection levels for both the free amino acid and **peptide** derivatives were in a few hundred picomoles compared to 10-50 nmol for the underivatized samples. Mass spectra of the **peptides** before or after derivatization showed the presence of only singly charged ions. However, collision-induced dissociation of the derivatized **peptides** showed predominance of b-type ions that are relatively less complicated in assigning the **peptide** sequence.

CC A (Food Sciences)  
CT ANALYTICAL TECHNIQUES; **FLAVOUR COMPOUNDS**; **PEPTIDES**;  
ANALYSIS

L8 ANSWER 2 OF 2 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1989(05):P0056 FSTA  
TI Bitter **peptides** derived from  $\alpha$ .sub.s.sub.1- and  
 $\beta$ -casein digested with alkaline protease from Bacillus subtilis.  
AU Sohn, K. H.; Lee, H. J.  
CS Correspondence (Reprint) address, H. J. Lee, Dep. of Food Sci. & Tech.,  
Coll. of Agric., Seoul Nat. Univ., Suwon 440-744, Korea Republic  
SO Korean Journal of Food Science and Technology, (1988), 20 (5) 659-665, 20  
ref.  
ISSN: 0367-6293

DT Journal  
LA English  
SL Korean

AB Alkaline proteinase can be used to accelerate cheese ripening, although bitter **flavour** arising during proteolysis is a major problem.  $\alpha$ .sub.s.sub.1- and  $\beta$ -casein were purified by DEAE-cellulose chromatography and digested with alkaline proteinase from Bacillus subtilis. Bitter fractions from hydrolysates were isolated by n-butanol extraction, Sephadex G-25 gel chromatography and HPLC. **Peptide** mixtures were separated by reversed-phase octadecyl silica column chromatography with a linear gradient of 0-80% acetonitrile containing 0.1% **trifluoroacetic acid**. Major peaks were combined from replicates and bitterness of each peak was evaluated. Bitter-tasting peaks were rechromatographed until isolated peaks were obtained. 3 bitter **peptides**, designated BP-1, BP-2 and BP-3, were obtained from  $\alpha$ .sub.s.sub.1-casein hydrolysate. BP-1 eluted at 34% acetonitrile, BP-2 at 35% and BP-3 at 26%. BP-4 and BP-5 were isolated from  $\beta$ -casein hydrolysate: BP-4 eluted at 40% acetonitrile and BP-5 at 42%. BP-5 was the most hydrophobic of the 5 BP, although BP-1 and BP-2 tasted more bitter than BP-4 and BP-5.

CC P (Milk and Dairy Products)  
CT BACILLUS; BITTER COMPOUNDS; CASEIN; CHEESE; DAIRY PRODUCTS; ENZYMES;  
**FLAVOUR**; **PEPTIDES**; PROTEINASES; PROTEOLYSIS; RIPENING;  
ACCELERATION # SUBTILIS PROTEINASE; **BITTER PEPTIDES**; BITTER  
PRINCIPLES; CASEIN HYDROLYSATES; HYDROLYSATES

=> d his

(FILE 'HOME' ENTERED AT 11:50:37 ON 04 MAY 2005)

FILE 'FSTA' ENTERED AT 11:50:48 ON 04 MAY 2005

L1 10873 S COCOA OR CHOCOLATE

L2 108 S L1 AND FLAVOR  
L3 42334 S FLAVOR OR FLAVOUR  
L4 1282 S L1 AND L3  
L5 7421 S PEPTIDE OR PEPTIDES  
L6 24 S L4 AND L5  
L7 711 S L3 AND L5  
L8 2 S L7 AND TRIFLUOROACETIC

=> s l7 and hplc

15922 HPLC

L9 96 L7 AND HPLC

=> d l9 all 1-96

L9 ANSWER 1 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2005:P1057 FSTA

TI Papain hydrolysates of casein: molecular weight profile and encapsulation in lipospheres.

AU Barbosa, C. M. S.; Morais, H. A.; Delvivo, F. M.; Mansur, H. S.; Oliveira, M. C. de; Silvestre, M. P. C.

CS Correspondence (Reprint) address, M. P. C. Silvestre, Dep. de Alimentos, Fac. de Farmacia, Univ. Fed. de Minas Gerais, 2360 Lourdes, Belo Horizonte, Brazil. E-mail malice(a)farmacia.ufmg.br

SO Journal of the Science of Food and Agriculture, (2004), 84 (14) 1891-1900, 53 ref.

ISSN: 0022-5142

DT Journal

LA English

AB Hydrolysis of casein by papain was studied in order to obtain hydrolysates of good oligopeptide profile. Influence of encapsulating hydrolysates in lipospheres was also studied with regard to product bitterness, vesicle size, hydrophobicity and lipid oxidation. 5 hydrolysates were prepared using different combinations of reaction temperature (37, 40 or 60°C) and enzyme:substrate ratio (2 or 4%), fractionated by size-exclusion

HPLC and analysed for free amino acids and **peptide** profiles using the rapid correct fraction area technique. 3 hydrolysates were obtained with similar, nutritionally appropriate **peptide** profiles which were selected for liposphere encapsulation. Degree of encapsulation of the 3 hydrolysates ranged from 50 to 83% as determined by 2nd derivative spectroscopy. Encapsulation in lipospheres reduced sample bitterness by 26-38% and also decreased hydrophobicity. Hydrolysates maintained good oxidative stability during 60 days of refrigerated storage and EM indicated that liposphere size was approx.  $5.0 \pm 1.0 \mu\text{m}$ . Of the 3 selected hydrolysates, the one obtained at 37°C using an enzyme:substrate ratio of 2% was regarded as most economically feasible for large-scale manufacture.

CC P (Milk and Dairy Products)

CT CASEIN; ENCAPSULATION; **FLAVOUR**; OXIDATION; **PEPTIDES**; PHYSICAL PROPERTIES; PROTEINASES; BITTERNESS; HYDROLYSIS; OXIDATIVE STABILITY; PAPAIN

L9 ANSWER 2 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2005:P0864 FSTA

TI Formation of bitter **peptides** during ripening of ovine milk cheese made with different coagulants.

AU Agboola, S.; Shaojiang Chen; Jian Zhao

CS Correspondence (Reprint) address, Jian Zhao, Sch. of Wine & Food Sci., Charles Sturt Univ., Locked Bag 588, Wagga Wagga, NSW, Australia. E-mail jzhao(a)csu.edu.au

SO Lait, (2004), 84 (6) 567-578, 34 ref.

ISSN: 0023-7302

DT Journal

LA English

SL French

AB Influence of coagulant on development of bitter **peptides** in ewes' milk cheese was studied, together with the role of **peptide** size in determining bitterness during ripening. Pecorino-style semi-hard cheese was manufactured from ewes' milk using 1 of 3 coagulants (water extract of cardoon, commercial calf rennet or microbial coagulant from *Rhizomucor miehei*), vacuum packed and analysed for hydrophobic and hydrophilic **peptides** in the water soluble fraction by RP-HPLC during 90 days of ripening at 13-16°C. Hydrophobic **peptides** were further analysed by size exclusion HPLC to determine molecular size and bitterness of the cheeses was evaluated by a trained sensory panel. Type of coagulant used affected **peptide** profiles, with cheeses made with cardoon extract having the highest concentration of both hydrophilic and hydrophobic **peptides**. Cheeses made with calf rennet or microbial coagulant had comparable levels of hydrophilic **peptides**, but the former had higher levels of hydrophobic **peptides**. Concentration of bitter **peptides** (those with a molecular size of 165-6500 g/mol) were highest in cheese made with microbial coagulant and lowest in cheese made with calf rennet. Cheese made with microbial coagulant was perceived to be the most bitter by the sensory panel, followed by cheese coagulated with calf rennet and cardoon. Sensory bitterness score was significantly correlated with total bitter **peptides** and ratio of bitter **peptides** to total **peptides** ( $P < 0.05$ ), but not with total hydrophobic **peptides**.

CC P (Milk and Dairy Products)

CT BITTER COMPOUNDS; CHEESE VARIETIES; COAGULATION; ENZYMES MILK CLOTTING; FLAVOUR; PEPTIDES; RHIZOMUCOR; RIPENING; SHEEP; VEGETABLES SPECIFIC; BITTER PEPTIDES; BITTERNESS; CALF RENNETS; CARDOONS; COAGULANTS; EWE CHEESE; PECORINO CHEESE; RHIZOMUCOR MIEHEI

L9 ANSWER 3 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2005:P0603 FSTA

TI Effect of soy protein supplementation on the quality of ripening Cheddar-type cheese.

AU Atia, M.; Xia Wenshui; Zhang Guonong

CS Correspondence (Reprint) address, Xia Wenshui, S. Yangtze Univ., Wuxi 214036, China

SO International Journal of Dairy Technology, (2004), 57 (4) 209-214, 23 ref. ISSN: 1364-727X

DT Journal

LA English

AB Effects of soy protein isolate were investigated on the proteolysis and sensory properties of Cheddar-type cheese during ripening. Cheese was prepared from milk (control) and milk + soy protein isolate using a starter culture of *Streptococcus thermophilus* and *Lactobacillus delbrueckii* subsp. *bulgaricus*. Samples were taken when fresh and following 3 and 5 months of ripening at  $12 \pm 1^\circ\text{C}$ . The mol. weight range of **peptide** fractions from the cheeses was determined by HPLC, and the microstructure was observed by SEM. Sensory analysis was used to compare the **flavour**, body, texture and appearance of the cheeses. Results show that the mol. weight range of **peptides** from the control cheese (9924-9966 Da) was larger than that of the soy protein-treated cheese (6954-6957 Da), and the microstructure of the latter was less compact than of the control cheese. In the sensory analysis, higher scores were given to some experimental cheese than the control cheese. After 5 months of ripening, the sensory properties of cheese had markedly improved and no bitter off-**flavour** was detected in the treated cheeses. It is concluded that soy protein could be used to improve the quality of cheese. Addition of 5% soy protein isolate is recommended for improving the **flavour** and texture of Cheddar-type soy supplemented cheese.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; PROTEOLYSIS; RIPENING; SENSORY PROPERTIES; SOY PROTEINS;



# CHEDDAR CHEESE; MICROSTRUCTURE

L9 ANSWER 4 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 2004:S2588 FSTA  
 TI Fractionation and characterization of the macromolecular meaty **flavor** enhancer from beef meat extract.  
 AU Kuroda, M.; Harada, T.  
 CS Food Res. & Dev. Lab., Ajinomoto Co. Inc., 1-1, Suzuki-cho, Kawasaki-ku, Kawasaki, Kanagawa 210-8681, Japan. E-mail motonaka\_kuroda(a)ajinomoto.co m  
 SO Journal of Food Science, (2004), 69 (7) C542-C548, 21 ref.  
 ISSN: 0022-1147  
 DT Journal  
 LA English  
 AB Macromolecular meaty **flavour** enhancer was fractionated from a commercial beef extract. The macromolecular fraction was obtained by dialysis and separated by anion-exchange chromatography, Cu.sup.2.sup.-chelate chromatography and gel filtration chromatography. 2 fractions were isolated as active meaty **flavour** enhancers. To elucidate the partial structures, the active fractions were treated with endoproteinase Glu-C followed by **HPLC** separation of the **peptide** fragments. Determinations of the amino acid compositions and amino acid sequences of the isolated fragments showed that the 2 active fractions consisted of collagen and tropomyosin. The macromolecular material obtained from heated collagen and tropomyosin in the low mol. weight fraction of beef soup stock enhanced the meaty **flavour**. Results suggested that collagen and tropomyosin were precursors of the macromolecular meaty **flavor** enhancer.  
 CC S (Meat, Poultry and Game)  
 CT BEEF; COLLAGEN; EXTRACTS; FLAVOURINGS; MEAT; PROTEINS ANIMAL; BEEF EXTRACTS; **FLAVOUR ENHANCERS**; TROPOMYOSIN

L9 ANSWER 5 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 2004:R0915 FSTA  
 TI Identification and characterization of the off-**flavor** in mantle muscle of jumbo squid (Dosidicus gigas) from the Gulf of California.  
 AU Sanchez-Brambila, G. Y.; Alvarez-Manilla, G.; Soto-Cordova, F.; Lyon, B. G.; Pacheco-Aguilar, R.  
 CS Correspondence (Reprint) address, R. Pacheco-Aguilar, CIAD, PO Box 1735, Hermosillo, Sonora, Mexico. E-mail rpacheco(a)cascabel.ciad.mx  
 SO Journal of Aquatic Food Product Technology, (2004), 13 (1) 55-67, 23 ref.  
 ISSN: 1049-8850  
 DT Journal  
 LA English  
 AB Jumbo squid (Dosidicus gigas) flesh may exhibit off flavours that affect consumer preferences. The role of **peptide** compounds in these off flavours was investigated through characterization of the **flavour** profile of jumbo squid from the Gulf of California. Descriptive analysis of the squid off **flavour** revealed sour and bitter components. Water soluble extracts from the mantle were fractionated by ultrafiltration and separated by size exclusion chromatography. 4 peaks (fractions 1-4) with retention volume between 100 and 350 ml were observed. Sensory analyses of chromatography peaks indicated that fraction 2 was consistent in sourness and bitterness intensity. Amino phase **HPLC** of fraction 2 resulted in the separation of 6 peaks. Analysis revealed these peaks to contain amino acids, thus indicating that low mol. weight, water soluble **peptides** may be involved in the off **flavour** of jumbo squid.  
 CC R (Fish and Marine Products)  
 CT **FLAVOUR**; **PEPTIDES**; SQUID; TAINTS; BITTERNESS; **OFF FLAVOUR**; SOURNESS

L9 ANSWER 6 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 2004:P0892 FSTA

TI Impact of autolytic and proteolytic lactobacilli and nisin-producing culture on proteolysis and sensory characteristics in Cheddar cheese.  
 AU Sallami, L.; Kheadr, E. E.; Fliss, I.; Vuilleumard, J. C.  
 CS Correspondence (Reprint) address, J. C. Vuilleumard, Cent. de Recherche en Sci. et Tech. du Lait (STELA), Univ. Laval, Que. G1K 7P4, Canada. E-mail jean-christophe.vuilleumard(a)fsaa.ulaval.ca  
 SO Journal of Food Science, (2004), 69 (1) FCT24-FCT32, 46 ref.  
 ISSN: 0022-1147  
 DT Journal  
 LA English  
 AB Effects of autolytic, proteolytic and nisin-producing Cheddar cheese starters on proteolysis and evolution of the sensory properties of the resultant cheeses during ripening were investigated. Cheddar cheeses were made using a nisin-tolerant starter culture with either *Lactobacillus delbrueckii* subsp. *bulgaricus* UL12 (autolytic strain), *Lb. casei* subsp. *casei* L2A (proteolytic strain), *Lactococcus lactis* subsp. *lactis* biovar. *diacetylactis* UL719 (nisin producer) or UL12 with UL719. Cheeses produced using UL12 contained more trichloroacetic acid-soluble N than those made using L2A, which contained more phosphotungstic acid-soluble N than those manufactured using UL719. HPLC analyses showed that use of either lactobacilli or UL719 increased the hydrophilic and hydrophobic **peptide** contents of the samples. Cheeses containing both UL12 and UL719 had the most intense old Cheddar cheese **flavour** after 6 months of ripening.  
 CC P (Milk and Dairy Products)  
 CT CHEESE VARIETIES; PROTEOLYSIS; RIPENING; SENSORY PROPERTIES; STARTERS; CHEDDAR CHEESE; CHEESE STARTERS  
  
 L9 ANSWER 7 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 2004:P0198 FSTA  
 TI Effect of commercial adjunct cultures on proteolysis in low-fat Kefalograviera-type cheese.  
 AU Michaelidou, A.; Katsiari, M. C.; Voutsinas, L. P.; Kondyli, E.; Alichanidis, E.  
 CS Correspondence (Reprint) address, E. Alichanidis, Lab. of Dairy Tech., Sch. of Agric., Aristotle Univ. of Thessaloniki, 541 24 Thessaloniki, Greece. Tel. +30-2310-998761. Fax +30-2310-998789. E-mail sali(a)agro.auth.gr  
 SO International Dairy Journal, (2003), 13 (9) 743-753, 29 ref.  
 ISSN: 0958-6946  
 DT Journal  
 LA English  
 AB A low-fat Kefalograviera cheese of similar **flavour** to the full-fat variety was produced by addition of a commercially-available adjunct culture (either LBC 80 (*Lactobacillus casei* subsp. *rhamnosus*) or CR-213 (*Lactococcus lactis* subsp. *cremoris* and *Lc. lactis* subsp. *lactis*)) to the cheese milk. Proteolysis in this experimental low-fat Kefalograviera cheese, containing 0.01 g/kg of LBC 80 or 1.2 g/kg CR-213, was investigated. A full-fat cheese (306 g milk fat/kg, 378 g moisture/kg) and a low-fat cheese (97 g milk fat/kg, 486 g moisture/kg, made using a modified procedure), not containing any adjunct culture, were also prepared as controls. Effect of the adjunct cultures on proteolysis, as examined by PAGE of cheese and water-soluble cheese extracts, was marginal. RP-HPLC **peptide** profiles of the water-soluble extracts from the low-fat cheese samples were similar, although quantitative differences were found between low-fat control cheese and experimental cheese. The fat content, as reflected by differences in **peptide** profile, affected the pattern of proteolysis. Contents of water-soluble N or 120 g/l trichloroacetic acid-soluble N were increased by addition of either adjunct culture ( $P < 0.05$ ). Furthermore, the adjunct cultures enhanced the concentration of low mol. weight N compounds; contents of total N, 50 g/l phosphotungstic acid-soluble N and free amino acids were higher in the low-fat experimental cheeses

than in the low-fat control cheese ( $P < 0.05$ ).

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; FATS; LACTOBACILLUS; LACTOCOCCUS; PROTEOLYSIS; FATS LOW FOODS; KEFALOGRAVIERA CHEESE; LACTOBACILLUS CASEI; LACTOCOCCUS LACTIS

L9 ANSWER 8 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2003:S1143 FSTA

TI Identification of small **peptides** generated in Spanish dry-cured ham.

AU Sentandreu, M. A.; Stoeva, S.; Aristoy, M. C.; Laib, K.; Voelter, W.; Toldra, F.

CS Correspondence (Reprint) address, F. Toldra, Inst. de Agroquímica y Tec. de Alimentos (CSIC), Apartado 73, 46100 Burjassot, Valencia, Spain. E-mail ftoldra(a)iata.csic.es

SO Journal of Food Science, (2003), 68 (1) 64-69, 26 ref. ISSN: 0022-1147

DT Journal

LA English

AB Small **peptide** sequences present in savory-flavoured, water-soluble fractions of Spanish dry-cured ham with were investigated. A water-soluble extract of dry-cured ham was fractionated by gel filtration chromatography. Fractions below 1200 Da were subjected to sensory analysis and their amino acid composition was determined before and after acid hydrolysis. Fractions with the highest **peptide** contents were further separated by cation exchange- and RP-HPLC in order to isolate and sequence the **peptides**. Results indicated the presence of several specific **peptides**, particularly dipeptides, in dry-cured ham. Possible impacts of the different **peptides** on the **flavour** of the separated fractions are discussed.

CC S (Meat, Poultry and Game)

CT **FLAVOUR**; FRACTIONATION; HAM; **PEPTIDES**; DRY CURED HAM

L9 ANSWER 9 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2003:P1575 FSTA

TI Proteolysis in miniature Cheddar-type cheeses made using blends of chymosin and Cynara cardunculus proteinases as coagulant.

AU O'Mahony, J. A.; Sousa, M. J.; McSweeney, P. L. H.

CS Correspondence (Reprint) address, M. J. Sousa, Dep. of Food Sci., Food Tech. & Nutr., Univ. Coll., Cork, Republic of Ireland. E-mail m.desousagallagher(a)ucc.ie

SO International Journal of Dairy Technology, (2003), 56 (1) 52-58, 30 ref. ISSN: 1364-727X

DT Journal

LA English

AB Proteolysis in miniature (20 g) Cheddar-type cheeses manufactured using blends of Cynara cardunculus proteinases and chymosin as coagulants (100:0, 50:50, 25:75 and 0:100 C. cardunculus proteinases:chymosin) was investigated. There were no substantial differences between the compositions of cheeses made using any of the 4 coagulant blends. Cheeses manufactured with coagulant blends containing C. cardunculus proteinases exhibited higher levels of pH 4.6-soluble N than cheeses made using coagulant blends containing chymosin. The extent of breakdown of  $\alpha$ .sub.s.sub.1-casein, as measured by urea-PAGE, was greater in cheeses made using coagulant blends containing proteinases than in cheeses made using 100% chymosin as a coagulant. Different RP-HPLC **peptide** profiles of the ethanol-soluble and -insoluble fractions were obtained for cheeses made using either C. cardunculus proteinases or chymosin as coagulant. Principal component analysis and hierarchical cluster analysis of RP-HPLC data confirmed that the inclusion of even small proportions (25%) of C. cardunculus proteinases with chymosin in the coagulant blend greatly altered the pattern and extent of proteolysis in miniature Cheddar-type cheeses.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; ENZYMES MILK CLOTTING; PROTEINASES; PROTEOLYSIS;  
VEGETABLES SPECIFIC; CHEDDAR CHEESE; CHYMOSIN; CYNARA CARDUNCULUS; MILK  
CLOTTING ENZYMES

L9 ANSWER 10 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 2003:P1498 FSTA  
TI Exchanging lactocepin plasmids in lactococcal starters to study bitterness  
development in Gouda cheese: a preliminary investigation.  
AU Pillidge, C. J.; Crow, V. L.; Coolbear, T.; Reid, J. R.  
CS Fonterra Res. Cent., Private Bag 11029, Palmerston North, New Zealand.  
Tel. +64 6 350 4649. Fax +64 6 350 4658. E-mail  
chris.pillidge(a)fonterraresearch.com  
SO International Dairy Journal, (2003), 13 (5) 345-354, 53 ref.  
ISSN: 0958-6946  
DT Journal  
LA English  
AB Most fast-milk-coagulating *Lactococcus lactis* starter strains contain a  
plasmid-encoded cell envelope proteinase (lactocepin; EC 3.4.21.96) having  
P.sub.I-type (lactocepin I) or P.sub.I.sub./sub.I.sub.I.sub.I  
intermediate-type (lactocepin I/III) specificity (those with  
P.sub.I.sub.I.sub.I-type specificity are rare). Effect of lactocepin I  
and lactocepin I/III on **peptide** accumulation and bitterness  
development in dry-salted Gouda cheese was studied by exchanging  
lactocepin plasmids between 2 *L. lactis* starter strains low in autolysis,  
thus eliminating the effects of other starter variables. Gouda was made  
using starter strains, either *L. lactis* subsp. *cremoris* HP (lactocepin I)  
or *L. lactis* subsp. *lactis* U (lactocepin I/III), or using constructs of  
these 2 strains with exchanged lactocepin plasmids. Bitterness of Gouda  
cheese was consistently greater when the starter strains contained  
lactocepin I. Following ripening, cheese **peptide** profiles  
(determined by HPLC) showed greater variability in relation to  
starter lactocepin specificity than in relation to starter strain  
background or sub-species (*lactis* or *cremoris*).  
CC P (Milk and Dairy Products)  
CT CHEESE VARIETIES; **FLAVOUR**; LACTOCOCCUS; PROTEINASES;  
PROTEOLYSIS; STARTERS; BITTERNESS; CHEESE STARTERS; GOUDA CHEESE;  
LACTOCOCCUS LACTIS

L9 ANSWER 11 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 2003:P1434 FSTA  
TI Proteolysis at the surface of Tilsit cheese.  
AU Churchill, M. M.; Hannon, J. A.; McSweeney, P. L. H.  
CS Correspondence (Reprint) address, P. L. H. McSweeney, Dep. of Food Sci.,  
Food Tech. & Nutr., Univ. Coll., Cork, Republic of Ireland. E-mail  
p.mcsweeney(a)ucc.ie  
SO Milchwissenschaft, (2003), 58 (5-6) 293-296, 24 ref.  
ISSN: 0026-3788  
DT Journal  
LA English  
SL German  
AB Smear-ripened cheeses, such as Tilsit, are defined by the development of a  
bacterial smear on the surface, which imparts a characteristic  
**flavour** and distinctive red-orange colour to the cheese.  
Proteolysis in the surface layers of Tilsit cheese was investigated.  
Sequential samples were taken from the cheese surface to a depth of 2 cm,  
in order to determine the extent to which enzymes from smear  
microorganisms penetrate into the cheese curd. Moisture levels increased  
from 36% at the surface to 43% at the core, whereas pH decreased from 8.7  
to approx. 6.0. Levels of pH 4.6-soluble N, expressed as % total N,  
tended to decrease as sample depth increased. Urea-PAGE revealed that  
strong  $\beta$ -casein degradation occurred within the upper few mm, where  
pH was sufficiently high to enhance plasmin activity. RP-HPLC  
showed greater **peptide** hydrolysis in the surface layers, and  
amino acid concentration were highest in the regions closest to the surface.

is concluded that, unlike volatile **flavour** compounds, enzymes diffuse very little from the surface of smear-ripened cheeses.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; ENZYMES; PROTEOLYSIS; TILSIT CHEESE

L9 ANSWER 12 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2003:P1108 FSTA

TI Hydrolysis of casein-derived **peptides**  $\alpha$ .sub.S.sub.1-casein(f1-9) and  $\beta$ -casein(f193-209) by Lactobacillus helveticus peptidase deletion mutants indicates the presence of a previously undetected endopeptidase.

AU Christensen, J. E.; Broadbent, J. R.; Steele, J. L.

CS Correspondence (Reprint) address, J. L. Steele, Dep. of Food Sci., Univ. of Wisconsin-Madison, Madison, WI 53706, USA. Tel. (608) 262-5960. Fax (608) 262-6872. E-mail jlsteele(a)facstaff.wisc.edu

SO Applied and Environmental Microbiology, (2003), 69 (2) 1283-1286, 23 ref. ISSN: 0099-2240

DT Journal

LA English

AB The proteolytic system of Lactobacillus helveticus CNRZ32 is of interest in relation to this organism's ability to reduce bitterness and enhance **flavour** development in cheese. In this study, the physiological availability and identification of hydrolysis products from casein-derived **peptides** were investigated. **Peptides** derived from hydrolysis of  $\alpha$ .sub.S.sub.1-casein(f1-9) [ $\alpha$ .sub.S.sub.1-CN(f1-9)] and  $\beta$ -CN(f193-209) with cell extracts of L. helveticus CNRZ32 and single-peptidase mutants ( $\Delta$ pepC,  $\Delta$ pepE,  $\Delta$ pepN,  $\Delta$ pepO,  $\Delta$ pepX) were isolated using RP- **HPLC** and were characterized by MS. **Peptides** identified suggested that there was activity of an endopeptidase, distinct from previously identified endopeptidases (PepE and PepO), with specificity for **peptide** bonds C terminal to Pro residues. Identification of hydrolysis products derived from a carboxyl-blocked form of  $\beta$ -CN(f193-209) indicated that the **peptides** were derived from the activity of an endopeptidase.

CC P (Milk and Dairy Products)

CT CASEIN; LACTOBACILLUS; **PEPTIDES**; PROTEINASES; ENDOPEPTIDASES; LACTOBACILLUS HELVETICUS

L9 ANSWER 13 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2003:P1070 FSTA

TI Preliminary observations on proteolysis in Manchego cheese made with a defined-strain starter culture and adjunct starter (Lactobacillus plantarum) or a commercial starter.

AU Poveda, J. M.; Sousa, M. J.; Cabezas, L.; McSweeney, P. L. H.

CS Dep. de Quimica Analitica y Tec. de Alimentos, Fac. de Quimicas, Univ. de Castilla-La Mancha, Campus Universitario s/n, Ciudad Real 13071, Spain. Tel. +34-926-295300. Fax +34-926-295318. E-mail justamaria.poveda(a)uclm.es

SO International Dairy Journal, (2003), 13 (2-3) 169-178, 42 ref. ISSN: 0958-6946

DT Journal

LA English

AB The potential of adding lactobacilli as adjunct cultures to pasteurized cheesemaking milk has been demonstrated previously in several studies. Effect of using a defined-strain starter culture and addition of a Lactobacillus plantarum adjunct culture to cheesemaking milk on ripening of Manchego cheese was investigated. Manchego cheese was manufactured using a defined starter consisting of Lactococcus lactis subsp. lactis and Leuconostoc mesenteroides subsp. dextranicum alone or with addition of L. plantarum isolated from a good quality Manchego cheese made from ewes' raw milk, or a commercial starter comprising 2 strains of L. lactis. Each Manchego cheese was sampled at 15, 45, 90 and 150 days of ripening. Composition, proteolysis and **flavour** were assessed for each cheese. Principal component analysis was performed on peak heights on

chromatograms produced from RP-HPLC separations of 70% (v/v) ethanol-insoluble and -soluble fractions of the cheese samples. From these data, cheese samples could be distinguished according to the starter used. Quantitative differences in several **peptides** were evident between the 3 cheeses. Cheeses made with the defined-strain starter received higher scores for **flavour** quality and intensity and overall impression than cheese made with the commercial starter.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; LACTOBACILLUS; LACTOCOCCUS; LEUCONOSTOC;  
**PEPTIDES**; SENSORY PROPERTIES; STARTERS; CHEESE STARTERS;  
LACTOBACILLUS PLANTARUM; LACTOCOCCUS LACTIS; LEUCONOSTOC MESENEROIDES;  
MANCHEGO CHEESE

L9 ANSWER 14 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2003:P0566 FSTA

TI Effect of pH and calcium concentration on proteolysis in mozzarella cheese.

AU Feeney, E. P.; Guinee, T. P.; Fox, P. F.

CS Correspondence (Reprint) address, P. F. Fox, Food Chem., Dep. of Food Sci. & Tech., Univ. Coll., Cork, Republic of Ireland. E-mail pff(a)ucc.ie

SO Journal of Dairy Science, (2002), 85 (7) 1646-1654, 40 ref.  
ISSN: 0022-0302

DT Journal

LA English

AB Proteolysis plays a major role in the development of **flavour** and texture in most rennet-curd cheese varieties. Effects of pH and Ca content and their interaction on proteolysis in mozzarella cheese were investigated. Low-moisture mozzarella cheeses, varying in Ca content and pH, were made using a starter culture (control; CL) or direct acidification (DA) with lactic acid or lactic acid and glucono- $\delta$ -lactone. pH and Ca concentration significantly affected the type and extent of proteolysis in mozzarella cheese during storage for 70 days at 4°C. For cheeses with a similar pH, reducing the Ca-to-casein ratio from approx. 29 to 22 mg/g of protein increased moisture content and primary and secondary proteolysis, as indicated by PAGE and by higher levels of N soluble in water at pH 4.6 or in 5% (w/w) tungstophosphoric acid (PTA). Increasing the pH of DA cheeses of similar moisture content, from approx. 5.5 to 5.9, while maintaining the Ca-to-casein ratio almost constant at approx. 29 mg/g, resulted in a decrease in primary proteolysis but had no effect on secondary proteolysis. Comparison of CL and DA cheeses with similar composition showed that the CL cheese had higher levels of  $\alpha$ -sub.s.sub.1-casein degradation, and pH of 4.6- and 5-PTA-soluble N. Analysis of pH 4.6-soluble N extracts by RP-HPLC showed that the CL cheese had higher concentration of compounds with low retention times, suggesting higher concentration of low molecular mass **peptides** and free amino acids.

CC P (Milk and Dairy Products)

CT CALCIUM; CHEESE VARIETIES; PH; PROTEOLYSIS; CA; MOZZARELLA CHEESE

L9 ANSWER 15 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2003:K0005 FSTA

TI Activation of remaining key enzymes in dried under-fermented cocoa beans and its effect on aroma precursor formation.

AU Misnawi, Jinap, S.; Nazamid, S.; Jamilah, B.

CS Correspondence (Reprint) address, S. Jinap, Fac. of Food Sci. & Biotech., Univ. Putra Malaysia, 43400 Serdang, Selangor DE, Malaysia. Tel. +60-3-8948-8368. Fax +60-3-8942-3552. E-mail jinap(a)putra.upm.edu.my

SO Food Chemistry, (2002), 78 (4) 407-417, 34 ref.  
ISSN: 0308-8146

DT Journal

LA English

AB Effects on aroma precursor formation of incubation and/or activation of remaining key enzymes (i.e. aspartic endoprotease, carboxypeptidase and invertase ( $\beta$ -fructofuranosidases)) in dried unfermented (DU) and

partially fermented (DPF) cocoa beans were investigated. Cocoa beans were fermented in a wooden box of 2 t capacity and turned daily by transferring them from 1 box to another. Cocoa beans on day 0 (unfermented) and days 1, 2 and 5 were sun dried to 7% moisture content, peeled, freeze dried, ground and defatted. Defatted cocoa powder was suspended in acetate buffer at pH 5.5 and incubated at 45°C whilst undergoing shaking for up to 24 h, then freeze dried. Enzymes were assayed and SDS-PAGE profiles, **peptides** pattern (HPLC), free amino acids (RP-HPLC), fermentation index and sugars were determined. DU cocoa beans contained significantly reduced levels of proteinases and, in particular, invertase; inactivation effects of fermentation were significantly lower than those of drying. In DU and DPF beans, 34 and 31%, respectively, of aspartic endoprotease activity remained, vs. 20 and 16% of carboxypeptidase activity and 19 and 7% of invertase activity. Remaining enzymes were at a sufficient concentration to conduct reactions

during

incubation, but they partially lost their activity immediately after incubation began, possibly due to interaction with the relatively high levels of polyphenols in the DU and DPF beans. **Peptide** patterns of defatted DU and DPF powders after incubation were similar to those of well fermented powders. Free amino acid levels increased significantly in the first 4 h of incubation in DU powders, whereas levels in DPF beans continued to increase, reaching values found in well fermented beans by 24 h. Reducing sugars concentration increased in both DU and DPF beans throughout incubation. Results indicated that **flavour** quality of DU/DPF cocoa beans could be improved by activation of remaining key enzymes.

CC K (Cocoa and Chocolate and Sugar Confectionery Products)

CT AMINO ACIDS; AROMA COMPOUNDS; COCOA BEANS; DRYING; FERMENTATION; GLYCOSIDASES; **PEPTIDES**; PROTEINASES; SUGARS; Nb -FRUCTOFURANOSIDASES; CARBOXYPEPTIDASES

L9 ANSWER 16 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2002:P1282 FSTA

TI Contribution of Lactococcus lactis cell envelope proteinase specificity to **peptide** accumulation and bitterness in reduced-fat Cheddar cheese.

AU Broadbent, J. R.; Barnes, M.; Brennand, C.; Strickland, M.; Houck, K.; Johnson, M. E.; Steele, J. L.

CS W. Dairy Cent., Utah State Univ., Logan, UT 84322-8700, USA. Tel. 435 797 2113. Fax 435 797 379. E-mail broadbnt(a)cc.usu.edu

SO Applied and Environmental Microbiology, (2002), 68 (4) 1778-1785, 43 ref. ISSN: 0099-2240

DT Journal

LA English

AB Bitterness is a **flavour** defect of Cheddar cheese that limits consumer acceptance. Specificity of the Lactococcus lactis extracellular proteinase (lactocepin) is widely believed to be a key factor in development of bitter cheese. To better define the contribution of this enzyme to bitterness, **peptide** accumulation and bitterness were determined in 50% reduced-fat Cheddar cheese manufactured with single isogenic strains of L. lactis as the only starter. 4 isogens were developed that lacked the major autolysin AcmA and were lactocepin-negative or expressed lactocepin with group a, e or h specificity. Analysis of cheese aqueous extracts by RP-HPLC confirmed that accumulation of  $\alpha$ .sub.s.sub.1-casein (f 1-23)-derived **peptides** f 1-9, f 1-13, f 1-16 and f 1-17 in cheese was directly influenced by lactocepin specificity. Trained sensory panellists determined that Cheddar cheese made with isogenic starters that produced group a, e or h lactocepin was significantly more bitter than cheese made with the proteinase-negative isogen, and that propensity for bitterness was highest in cells that produced group h lactocepin. Results confirmed the role of this starter proteinase in bitterness, and suggest that the bitter **flavour** formation in cheese could be overcome by exchange or replacement of the starter lactocepin gene.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; FATS; **FLAVOUR**; LACTOCOCCUS; **PEPTIDES**  
; PROTEINASES; STARTERS; BITTERNESS; CHEDDAR CHEESE; CHEESE STARTERS; FATS  
LOW FOODS; LACTOCOCCUS LACTIS

L9 ANSWER 17 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 2002:P1268 FSTA  
TI Effect of Enterococcus faecium on microbiological, physicochemical and  
sensory characteristics of Greek Feta cheese.  
AU Sarantinopoulos, P.; Kalantzopoulos, G.; Tsakalidou, E.  
CS Correspondence (Reprint) address, E. Tsakalidou, Lab. of Dairy Res., Dep.  
of Food Sci. & Tech., Agric. Univ. of Athens, 118 55 Athens, Greece. Tel.  
+3010-529-4676. Fax +3010-529-4672. E-mail et(a)aua.gr  
SO International Journal of Food Microbiology, (2002), 76 (1/2) 93-105, 47  
ref.  
ISSN: 0168-1605  
DT Journal  
LA English  
AB Effect of using Enterococcus faecium strains FAIR-E 198 and FAIR-E 243 as  
adjunct starters, either singly or in combination, on the microbiological,  
physicochemical and sensory characteristics of Greek Feta cheese was  
investigated. Results showed that a rapid increase in enterococci numbers  
occurred up to day 15 of ripening in control and E. faecium-inoculated  
cheese batches, after which time numbers remained constant. Both E.  
faecium strains reduced the numbers of non-starter lactic acid bacteria,  
micrococci and coliforms, but had no influence on thermophilic cocci  
numbers. Growth of mesophilic cocci and thermophilic bacilli was  
enhanced by E. faecium FAIR-E 243. E. faecium strains did not influence  
cheese pH, moisture, ash, salt in moisture and fat in DM. Of all  
physicochemical characteristics, E. faecium strains, either singly or in  
combination, had the most pronounced effect on proteolysis; proteolytic  
index and free amino group concentration were increased, and degradation of  
 $\alpha$ .sub.s.sub.1- and  $\beta$ -caseins was enhanced in comparison to the  
control. E. faecium strains also significantly affected the RP-  
**HPLC peptide** profiles of water-soluble N fractions.  
Ethanol, acetate, acetone, acetaldehyde, acetoin and diacetyl were the  
main volatile compounds produced, with ethanol being present in the  
highest concentration followed by acetate. Both E. faecium strains enhanced  
the  
**flavour**, aroma, colour, structure and overall sensory profile of  
full-ripened cheeses. It is concluded that E. faecium has the  
technological potential to be used as an adjunct starter in Feta cheese  
manufacture.  
CC P (Milk and Dairy Products)  
CT CHEESE VARIETIES; CHEESEMAKING; ENTEROCOCCUS; MICROBIOLOGICAL QUALITY;  
PHYSICAL PROPERTIES; SENSORY PROPERTIES; STARTERS; CHEESE STARTERS;  
ENTEROCOCCUS FAECIUM; FETA CHEESE; PHYSICOCHEMICAL PROPERTIES

L9 ANSWER 18 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 2002:P1072 FSTA  
TI Determination of taste-active compounds of a bitter Camembert cheese by  
omission tests.  
AU Engel, E.; Septier, C.; Leconte, N.; Salles, C.; Quere, J. L. le  
CS Unite Mixte de Recherches sur les Aromes, INRA, 17 Rue Sully, BP  
86510-21065 Dijon Cedex, France. E-mail engel(a)grigon.inra.fr  
SO Journal of Dairy Research, (2001), 68 (4) 675-688, 29 ref.  
ISSN: 0022-0299  
DT Journal  
LA English  
AB **Flavour** active compounds in a Camembert cheese selected for its  
intense bitterness defect were investigated. A water-soluble fraction  
(WSE) was extracted from the cheese with pure water and fractionated by  
successive tangential ultrafiltrations and nanofiltration.  
Physicochemical assessment of the various fractions led to construction of  
a model WSE which was compared by sensory evaluation to the crude



water-soluble extract using a panel of 16 trained tasters. As no significant difference was perceived, this model WSE was then used directly or mixed with other cheese components for omission tests. Among the main **flavour** characteristics of WSE (salty, sour, umami and bitter), bitterness was attributed to small **peptides** whose mass distribution was established by RP-HPLC-MS as 400-3000 Da, and whose **flavour** properties are discussed.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; **FLAVOUR**; **PEPTIDES**; BITTERNESS;  
CAMEMBERT CHEESE

L9 ANSWER 19 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2002:P0378 FSTA

TI Hydrolysis of caseins and formation of hydrophilic and hydrophobic **peptides** by wild *Lactococcus lactis* strains isolated from raw ewes' milk cheese.

AU Morales, P.; Fernandez-Garcia, E.; Gaya, P.; Medina, M.; Nunez, M.

CS Correspondence (Reprint) address, M. Nunez, Dep. de Tec. de Alimentos, INIA, Carretera de La Coruna Km 7, 28040 Madrid, Spain. E-mail nunez(a)inia.es

SO Journal of Applied Microbiology, (2001), 91 (5) 907-915, 27 ref.  
ISSN: 1364-5072

DT Journal

LA English

AB Hydrolysis of  $\alpha$ .sub.s.sub.1-,  $\alpha$ .sub.s.sub.0-,  $\beta$ .sub.B-,  $\beta$ .sub.A.sub.1- and  $\beta$ .sub.A.sub.2-caseins by 32 wild lactococci (strains of *Lactococcus lactis* subsp. cremoris and *L. lactis* subsp. lactis) of different RAPD patterns, isolated from raw ewes' milk cheese, was investigated, together with the production of hydrophilic and hydrophobic **peptides** from whole casein by those strains. Most strains hydrolysed all caseins, and degraded  $\beta$ -caseins to a larger extent than  $\alpha$ .sub.s-caseins, when the proteolytic activity of whole cells was determined by capillary electrophoresis. Higher levels of hydrophilic than hydrophobic **peptides** were produced from whole caseins by all strains according to RP-HPLC analyses. Cell envelope proteinases of most lactococci isolated from raw ewes' milk cheese were classified as CEP.sub.I.sub.I, CEP.sub.I.sub.I.sub./sub.I.sub.I.sub.I or CEP.sub.I.sub.I.sub.I (classification of Exterkate et al. 1993). A negative correlation was found between degraded  $\alpha$ .sub.s- and  $\beta$ -caseins and a highly positive correlation was found between hydrophilic and hydrophobic **peptides**. Results showed that fast acid-producing lactococci from raw ewes' milk cheese have considerable and diverse caseinolytic activities. Their **peptide** production patterns do not reveal serious risks of bitter-**flavour** defect in cheeses if used as components of dairy starters.

CC P (Milk and Dairy Products)

CT CASEIN; LACTOCOCCUS; **PEPTIDES**; HYDROLYSIS; LACTOCOCCUS LACTIS

L9 ANSWER 20 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2002:G0267 FSTA

TI Analysis of taste-active compounds in an enzymatic hydrolysate of deamidated wheat gluten.

AU Schlichtherle-Cerny, H.; Amado, R.

CS Nestle Res. Cent., Nestec Ltd., PO Box 44, CH-1000 Lausanne 26, Switzerland. Tel. +41-21-785-89-59. Fax +41-21-785-89-49. E-mail hedwig.schlichtherle-cerny(a)rdls.nestle.com

SO Journal of Agricultural and Food Chemistry, (2002), 50 (6) 1515-1522, 41 ref.  
ISSN: 0021-8561

DT Journal

LA English

AB Hydrolysed plant proteins are used widely as ingredients in culinary products due to their glutamate-like ('umami') taste. 3 hydrolysates were prepared from wheat gluten using different enzymic approaches. Comparison

of their **flavour** profiles revealed the enzymic hydrolysate of an acid-deamidated wheat gluten (WGH-3) to be the least bitter of all and to elicit an intense glutamate-like taste. Its umami **flavour** intensity was similar to that of an enzymic hydrolysate in which glutaminase had been employed to convert free glutamine to glutamic acid, and which had a 3-fold higher concentration of free glutamate. Reconstitution studies based on results of the chemical analysis of WGH-3, and sensory comparison of the model solution and WGH-3 indicated that other components in addition to glutamic acid and organic acids contribute to its glutamate-like **flavour**. WGH-3 was fractionated by gel permeation chromatography and RP-HPLC, and 2 fractions with a pronounced glutamate-like **flavour** were obtained. In one of them, 4 pyroglutamyl **peptides** were tentatively identified: pGlu-Pro-Ser, pGlu-Pro, pGlu-Pro-Glu and pGlu-Pro-Gln. It is thought that these **peptides** were formed by cyclization of the N-terminal glutamine residues during preparation of the hydrolysates.

CC G (Catering, Speciality and Multicomponent Foods)

CT **FLAVOUR**; GLUTAMIC ACID; GLUTEN; PROTEINS; WHEAT; PROTEIN HYDROLYSATES; WHEAT GLUTEN

L9 ANSWER 21 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2001(12):S1841 FSTA

TI Effect of curing conditions and Lactobacillus casei CRL705 on the hydrolysis of meat proteins.

AU Fadda, S.; Vignolo, G.; Aristoy, M. C.; Oliver, G.; Toldra, F.

CS Correspondence (Reprint) address, G. Vignolo, Cent. de Referencia para Lactobacilos (CERELA), Chacabuco 145, 4000 San Miguel de Tucuman, Argentina. E-mail vignolo(a)cerela.org.ar

SO Journal of Applied Microbiology, (2001), 91 (3) 478-487, 40 ref. ISSN: 1364-5072

DT Journal

LA English

AB The bacteriocinogenic strain Lactobacillus casei CRL705, originally isolated from sausages, has potential for use as a starter culture in dry, cured sausage production. In this study, the effects of curing agents and processing conditions on the proteolytic activity of L. casei CRL705 against meat proteins were investigated. Hydrolysis of pork sarcoplasmic and myofibrillar proteins was evaluated by SDS-PAGE and RP-HPLC. Ascorbic acid was found to exert a stimulatory effect on both sarcoplasmic and myofibrillar protein degradation with the release of hydrophilic **peptides** and free amino acids. In contrast, NaCl and NaNO<sub>2</sub> stimulated predominantly myofibrillar degradation. The presence of curing salts caused a significant increase in the level of non-volatile **flavour** components.

CC S (Meat, Poultry and Game)

CT CURING; **FLAVOUR COMPOUNDS**; LACTOBACILLUS; PORK; PROTEOLYSIS; CURING AGENTS; LACTOBACILLUS CASEI

L9 ANSWER 22 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2001(12):P1907 FSTA

TI Bitterness in processed cheese caused by an overdose of a specific emulsifying agent?

AU Mayer, H. K.

CS Dep. of Dairy Res. & Bact., Univ. of Agric. Sci., A-1180 Vienna, Austria. E-mail mayer(a)mail.boku.ac.at

SO International Dairy Journal, (2001), 11 (4-7) 533-542, 29 ref. ISSN: 0958-6946

DT Journal

LA English

AB A problem in manufacture of processed cheese slices was investigated. The problem was caused by the occasional production of batches of processed cheese that had an unacceptable bitter **flavour** and crumbly texture. The investigation involved comparing composition of the defective cheese with good quality batches of the same processed cheese

product. Casein, and water and 50% ethanol soluble N fractions were examined using urea- and SDS-PAGE and IEF. The amino-N fraction of the processed cheeses was analysed by RP-HPLC. Results showed that the bitter cheese samples contained a low amount or no detectable  $\alpha$ -sub.s.sub.1- and  $\beta$ -casein, and  $\gamma$ -caseins and low mol. weight **peptides**; these results were confirmed by Kjeldahl analysis. In comparison with the respective reference samples, RP-HPLC profiles of bitter cheese samples showed very high concentration of hydrophilic and hydrophobic **peptides**. Since significantly higher concentration of ash and P were detected in bitter cheese samples, it was concluded that the defective batches of processed cheese slices had been produced using too high a concentration of a specific emulsifying agent (of high P content).

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; **FLAVOUR**; TEXTURE; BITTERNESS; CRUMBLINESS; PROCESSED CHEESE; QUALITY

L9 ANSWER 23 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2001(12):K0335 FSTA

TI Isolation and characterization of 2S cocoa seed albumin storage polypeptide and the corresponding cDNA.

AU Sunil Kochhar; Gartenmann, K.; Guilloteau, M.; McCarthy, J.

CS Nestle Res. Cent., PO Box 44, Vers-chez-les-Blanc, CH-1000 Lausanne 26, Switzerland. Tel. +41 21 785 9336. Fax +41 21 785 8549. E-mail sunil.kochhar(a)rdls.nestle.com

SO Journal of Agricultural and Food Chemistry, (2001), 49 (9) 4470-4477, 28 ref.

ISSN: 0021-8561

DT Journal

LA English

AB The amine pool of cocoa is an essential component for the development of typical cocoa **flavour**. To increase understanding and aid in production of an intense in vitro cocoa **flavour**, polypeptides which are the source of the amine **flavour** precursor pool were sought. Chromatographic analysis of the polypeptide profile of unfermented cocoa resulted in identification of a novel storage polypeptide of M.sub.r 8515. The N-terminal sequence of the first 34 residues of the purified polypeptide showed similarity to 2S storage albumins of cotton and Brazil nut, and the sweet protein mabinlin. To identify corresponding cDNA of the putative cocoa 2S albumin, 18 randomly chosen clones from the cDNA library of immature Theobroma cacao seed mRNA were sequenced, and a full-length cDNA clone encoding a protein harbouring the N-terminal sequence of the novel polypeptide was selected. The open reading frame of the clone encoded a polypeptide of M.sub.r 17125. Comparison of the translated amino acid sequence of the precursor protein or the mature polypeptide against the Swiss-Prot and TrEMBL databases showed high sequence similarity (>52%) and identity (>38%) to many plant 2S albumins. Tryptic **peptide** mass fingerprinting of the purified polypeptide by HPLC-electrospray ionization MS showed 10 masses that match the expected tryptic **peptides** of the deduced sequence. Together with published work on plant 2S albumin processing, it is concluded that results presented here suggest that post-translational processing yields a 73-residue polypeptide (residue positions 78-150) corresponding to the 9 kDa subunit of the mature cocoa 2S albumin protein.

CC K (Cocoa and Chocolate and Sugar Confectionery Products)

CT COCOA BEANS; **PEPTIDES**; PROTEINS CEREAL; PROTEINS VEGETABLE; POLYPEPTIDES; STORAGE PROTEINS

L9 ANSWER 24 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2001(03):P0531 FSTA

TI Evaluation of bitterness in Cheddar cheese.

AU Frister, H.; Michaelis, M.; Schwerdtfeger, T.; Folkenberg, D. M.; Sorensen, N. K.

CS Dep. of Bioprocess Eng., Univ. of Applied Sci. Hanover, Germany

SO Milchwissenschaft, (2000), 55 (12) 691-695, 16 ref.  
 ISSN: 0026-3788  
 DT Journal  
 LA English  
 AB Two 6-month-old Cheddar cheese samples sets, including 7 and 16 samples, respectively, were produced using different starter cultures to obtain different bitterness levels. Data consisting of 36 chemical ripening parameters generated from RP-HPLC and other relevant analytical techniques, and 435 variables calculated from the measured parameters were correlated with bitterness by multivariate statistical analyses (1st and 2nd partial least squares regression (PLSR)). The 1st PLSR showed that in both sample sets, several **peptides** of secondary proteolysis could be related to formation of bitterness. It was possible to explain 65% of the variation in bitterness by 26 variables originating from **peptides** in the 1st sample set. For the 2nd sample set, 66% of the variation could be explained by 163 variables. In the case of the 2nd PLSR, 6 and 19 variables originating from **peptides**, caseins and casein fragments explained, in both sample sets, 94 and 59% variation of bitterness, respectively. 1 hydrophobic **peptide** area came up as a common significant indicator of bitterness. Analytical parameters of primary proteolysis, in particular  $\beta$ -casein as well as fragments of  $\beta$ - and  $\alpha$ -sub.s.sub.1-casein, were determined as supplementary indicators for evaluation of bitterness. The highly significant negative correlation between bitterness and the content of free fatty acids in the 2nd sample set indicated a lipolytic side activity of the debittering cultures.

CC P (Milk and Dairy Products)  
 CT CASEIN; CHEESE VARIETIES; **FLAVOUR**; **PEPTIDES**; BITTERNESS; CHEDDAR CHEESE

L9 ANSWER 25 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 2000(11):P1766 FSTA  
 TI Comparative study by multivariate statistical analysis of proteolysis in a sodium caseinate solution under cheese-like conditions caused by strains of Lactococcus.

AU Pripp, A. H.; Shakeel-Ur Rehman; McSweeney, P. L. H.; Sorhaug, T.; Fox, P. F.  
 CS Dep. of Food Sci., Agric. Univ. of Norway, PO Box 5036, N-1432 As, Norway. Tel. +47-64-94-85-50. Fax +47-64-94-37-89. E-mail inf(a)inf.nlh.no  
 SO International Dairy Journal, (2000), 10 (1/2) 25-31, 19 ref.  
 ISSN: 0958-6946  
 DT Journal  
 LA English  
 AB Proteolysis during cheese ripening is used as an indicator of cheese **flavour** development. Due to the complexity of this biochemical process it has been suggested that use of models of cheese proteolysis may improve reproducibility or standardization of data. A sodium caseinate model of Cheddar or Gouda cheese ripening was used to compare proteolytic activity of various lactococci. Data from the model were subjected to principal components and hierarchical cluster analyses and compared with results from a study using miniature Cheddar-type cheese models [see FSTA (1999) 31 10Pj1496]. Cell free suspensions of Lactococcus lactis subsp. cremoris strains 223, 227, SK11, AM1, Wg2 or L. lactis subsp. lactis UC317 were added to solutions of 3% (w/v) sodium caseinate and 5% (w/v) NaCl (pH 5.25, 8°C). Proteolysis was assessed after 2, 9, 17 and 23 days via PAGE analysis of pH 4.6 and 70% ethanol-insoluble **peptides** and HPLC profiles of 70% ethanol soluble **peptides**. Statistical analysis showed no clear clustering of PAGE **peptide** profiles based on Lactococcus strain, while 3 clusters were distinguished from HPLC profiles (L. lactis SK11 and AM1; L. lactis 223, 227 and Wg2; and L. lactis UC317). Biochemical events which produce differences in proteolysis are discussed. Results were similar to those obtained from experiments using miniature cheeses.

CC P (Milk and Dairy Products)

CT CASEINATES; CHEESEMAKING; LACTOCOCCUS; PROTEOLYSIS; LACTOCOCCUS LACTIS; MODELLING; SODIUM CASEINATE

L9 ANSWER 26 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 2000(11):P1763 FSTA  
TI Ripening of Cheddar cheese made from blends of raw and pasteurised milk.  
AU Shakeel-Ur Rehman; McSweeney, P. L. H.; Banks, J. M.; Brechany, E. Y.; Muir, D. D.; Fox, P. F.  
CS Correspondence (Reprint) address, P. L. H. McSweeney, Dep. of Food Sci. & Tech., Univ. Coll., Cork, Republic of Ireland. Tel. +353-21-902011. Fax +353-21-270001. E-mail pmcs(a)ucc.ie  
SO International Dairy Journal, (2000), 10 (1/2) 33-44, 46 ref.  
ISSN: 0958-6946  
DT Journal  
LA English  
AB Effects of non-starter lactic acid bacteria (NSLAB) on quality of Cheddar cheese were investigated. Cheeses were made from blends of raw and pasteurized milk, increasing proportions of raw milk increasing NSLAB counts. Degrees of proteolysis and lipolysis, volatile compounds present and sensory properties of cheeses were measured after ripening. Ratios of raw to pasteurized milk used were 100:0, 10:90, 5:95, 1:99 and 0:100, giving cheeses with 10<sup>sup.7</sup>, 10<sup>sup.6</sup>, 10<sup>sup.5</sup>, 10<sup>sup.4</sup> and 0 cfu NSLAB/g, respectively, after 1 month of ripening; after 4 months, cheese made with pasteurized milk only contained 10-100x less NSLAB than the other cheeses. All cheeses produced had similar **peptide** profiles on PAGE and **HPLC** analyses. However, amino acid concentration of cheeses increased with increasing addition of raw cheesemaking milk. Increasing the initial concentration of NSLAB also increased fatty acid and fatty acid ester content of 4-month-old cheeses. Fruity/sweet and pungent aromas, aroma intensity and perceived maturity increased with increasing raw milk concentration while no specific trends regarding cheese **flavour** were noted. Commercial graders awarded highest **flavour** scores to cheese prepared with 1% raw milk. It is concluded that NSLAB present in milk influence quality and ripening of Cheddar cheese.

CC P (Milk and Dairy Products)  
CT BACTERIA; CHEESE VARIETIES; MILK; CHEDDAR CHEESE; CHEESE MILK; LACTIC ACID BACTERIA; QUALITY; RAW MILK

L9 ANSWER 27 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 2000(06):P0953 FSTA  
TI Microbiology and biochemistry of Fossa (pit) cheese.  
AU Gobbeti, M.; Folkertsma, B.; Fox, P. F.; Corsetti, A.; Smacchi, E.; Angelis, M. de; Rossi, J.; Kilcawley, K.; Cortini, M.  
CS Istituto di Microbiol. Lattiero-Casearia, Fac. de Agraria di Perugia, Univ. di Perugia, 06126 Perugia, Italy. Tel. +39-881-714694. Fax +39-881-740211. E-mail gobbeti(a)unipg.it  
SO International Dairy Journal, (1999), 9 (11) 763-773, 36 ref.  
ISSN: 0958-6946  
DT Journal  
LA English  
AB Microbiological quality, composition and sensory properties of Fossa (or pit) cheese, an Italian hard cheese that is ripened in pits in the ground, were investigated. 7 cheeses (5 ewes' milk, 1 cows' milk and 1 cows' and ewes' milk (70:30) cheeses) were analysed. 1 of the ewes' milk cheeses was prepared with unpasteurized milk and without addition of a starter whereas all other cheeses were prepared using a starter of Lactococcus lactis subsp. lactis and cremoris. Results, however, were similar for all cheeses regardless of differences in preparation. Lactococci were detected in low numbers (<2 log cfu/g in 6 cheese samples) whereas non-starter lactic acid bacteria, i.e. Lactobacillus spp., counts were higher at 5.8-7.8 log cfu/g. Cheeses with the highest non-starter lactic acid bacteria counts had the highest peptidase activities and amino acid concentration; major amino acids detected were Glu, Leu, Val and Lys. High NaCl

concentration (approx. 11.5%) and low a.sub.w (approx. 0.850) decreased microbial counts and proteolysis in cheeses. Values for pH 4.6 soluble N:Total N ratios were 0.236-0.391 and for free amino acid concentration were 11.37-41.06 mg/g; no trend between these parameters and method of cheese preparation was observed. Cheese samples could be distinguished using urea-PAGE patterns of pH 4.6 insoluble N fractions. In contrast, reversed-phase HPLC analysis of ethanol-soluble fractions of cheeses produced a peptide profile which was the same for all cheese samples. Lipolysis in cheese samples was moderate with total free fatty acid concentration

of 578-1676 mg/kg; butyric, caproic, palmitic and oleic acids were the major fatty acids detected. Flavour quality and intensity, and body and texture of cheeses was determined by a taste panel; differences in these sensory properties correlated with differences in proteolytic activity.

CC P (Milk and Dairy Products)

CT BACTERIA; CHEESE VARIETIES; SENSORY PROPERTIES; COMPOSITION; FOSSA CHEESE

L9 ANSWER 28 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2000(04):S0570 FSTA

TI Hydrolysis of muscle myofibrillar proteins by Lactobacillus curvatus and Lacobacillus sake.

AU Sanz, Y.; Fadda, S.; Vignolo, G.; Aristoy, M. C.; Oliver, G.; Toldra, F.

CS Correspondence (Reprint) address, F. Toldra, Inst. de Agroquímica y Tec. de Alimentos, CSIC, Apartado 73, 46100 Burjassot, Valencia, Spain. Tel. +34-96-390-0022. Fax +34-96-363-6301. E-mail ftoldra(a)iata.csic.es

SO International Journal of Food Microbiology, (1999), 53 (2/3) 115-125, 36 ref.

ISSN: 0168-1605

DT Journal

LA English

AB Susceptibility of muscle myofibrillar proteins to degradation by whole cell and cell free extracts (CFE) of proteolytic enzymes of lactobacilli was investigated. Activities of enzyme preparations from strains of Lactobacillus curvatus and L. sake, isolated from dry-cured sausages, against myofibrillar protein extracts were measured by SDS-PAGE and reverse-phase HPLC. CFE of L. curvatus CECT 904 and L. sake CECT 4808 proteolytic enzymes exerted a weak hydrolysis on muscle myofibrillar proteins, while whole cells of both Lactobacillus strains produced hydrophilic peptides of importance in development in cured meat flavour. Net increases in glutamic acid and serine were observed with both strains, as well as an increase in glycine with L. curvatus. Enhanced peptidase activity in the simultaneous presence of whole cells and CFE of both strains suggests a combined action between extra and intracellular enzymes.

CC S (Meat, Poultry and Game)

CT LACTOBACILLUS; PROTEINASES; PROTEINS ANIMAL; SAUSAGES; ANIMAL PROTEINS; DRY SAUSAGES; HYDROLYSIS

L9 ANSWER 29 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2000(04):S0544 FSTA

TI Dry cured Iberian ham non-volatile components as affected by the length of the curing process.

AU Ruiz, J.; Garcia, C.; Carmen-Diaz, M. del; Cava, R.; Florencio-Tejeda, J.; Ventanas, J.

CS Tec. y Bioquímica Alimentos, Fac. de Vet., Univ. de Extremadura, 10071, Cáceres, Spain. Tel. +34-927-257169. Fax +34-927-257110. E-mail jruiz(a)unex.es

SO Food Research International, (1999), 32 (9) 643-651, 41 ref.

ISSN: 0963-9969

DT Journal

LA English

AB Dry-cured Iberian hams are increasingly being ripened using shorter curing

periods than traditionally used in order to reduce costs; however, this practice results in reduced **flavour** intensity of the product. In order to determine which chemical changes are involved in this **flavour** reduction, effects of reduced period dry-cured ham processing on formation of non-volatile compounds and their relation to **flavour** characteristics were investigated. 10 dry-cured Iberian hams ripened for 600 and 420 days (traditional and shortened processes, respectively) were analysed for free amino acids and **peptides** using reversed-phase **HPLC**. Sensory properties of hams were assessed by a trained panel of 14 members. A reduction in levels of most amino acids was observed in 600-day ripened hams compared with 420-day ripened hams. Several **peptides** showed significantly increased levels in 600-day ripened hams compared with those ripened for 420 days; these **peptides** had mol. weight in the range 189-317. Bitter notes in ham samples were correlated (using partial least squares regression) with some of the **peptide** peaks determined by **HPLC**, especially those eluted at the end of the process. Saltiness was mainly determined by chloride content and was inversely correlated with moisture content. Hams subjected to the shorter ripening process were characterized as being sweeter (probably due to lower salt content and higher free amino acid contents); traditionally processed hams were characterized by higher saltiness values and (to a lesser extent) bitterness, probably because of higher salt and **peptide** contents.

CC S (Meat, Poultry and Game)

CT AMINO ACIDS; **FLAVOUR**; HAM; **PEPTIDES**; RIPENING; IBERIAN HAM

L9 ANSWER 30 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2000(04):P0626 FSTA

TI Introduction of peptidase genes from *Lactobacillus delbrueckii* subsp. *lactis* into *Lactococcus lactis* and controlled expression.

AU Wegmann, U.; Klein, J. R.; Drumm, I.; Kuipers, O. P.; Henrich, B.

CS Correspondence (Reprint) address, J. R. Klein, Fachbereich Biol., Abteilung Mikrobiol., Univ. Kaiserlautern, Postfach 3049, D-67653 Kaiserlautern, Germany. Tel. 49-631-205-2347. Fax 49-631-205-3799. E-mail jklein(a)rhrk.uni-kl.de

SO Applied and Environmental Microbiology, (1999), 65 (11) 4729-4733, 24 ref. ISSN: 0099-2240

DT Journal

LA English

AB Proteolysis of milk proteins by clotting enzymes, indigenous milk proteins and bacterial enzymes from both starter and non-starter strains, is important for texture, taste and **flavour** development during cheese ripening. To improve speed and efficiency of bacterial proteolysis, peptidases PepI, PepL, PepW and PepG from *Lactobacillus delbrueckii* subsp. *lactis* DSM 7290, which have no counterparts in *Lactococcus lactis*, and peptidase PepQ, were examined to determine their potential to confer new peptidolytic properties to lactococci. Controllable expression of the corresponding genes (pep genes) was achieved by constructing translational fusions with the promoter of the *nisA* gene (P.sub.n.sub.i.sub.s.sub.A). A suitable host strain, *L. lactis* UKLc10, was constructed by chromosomal integration of the genes encoding the NisRK 2-component system into the 5-fold peptidase-deficient mutant IM16 of *L. lactis*. Recombinants of this strain were used to analyse growth, peptidase activities, **peptide** utilization and intracellular protein cleavage products. After nisin induction of P.sub.n.sub.i.sub.s.sub.A::pep fusions, all of the peptidases were detected as distinct bands in SDS-PAGE gels. Despite the fact that identical transcription and translation signals were used to express the pep genes, the relative amounts of individual peptidases varied considerably (PepW, PepG and PepI > PepQ and PepL). All of the peptidases exhibited activities in extracts of recombinant UKLc10 clones (PepI > PepQ > PepL > PepG > PepW). Only PepL and PepG however, allowed the clones to

utilize specific **peptide** substrates (Leu-Gly-Pro and Leu-Leu-Leu, respectively), as sources of essential amino acids. In milk medium containing 10% reconstituted skim milk, induction of pepG and pepW resulted in growth acceleration. Activities of all 5 peptidases during growth in milk medium were revealed by HPLC analyses of intracellular amino acid and **peptide** pools.

CC P (Milk and Dairy Products)

CT ENZYMES MILK CLOTTING; GENE CLONING; GENE EXPRESSION; LACTOBACILLUS; LACTOCOCCUS; PROTEINASES; PROTEINS MILK; LACTOBACILLUS DELBRUECKII; LACTOCOCCUS LACTIS; MILK CLOTTING ENZYMES; MILK PROTEINS; PEPTIDASES; TRANSFORMATION

L9 ANSWER 31 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2000(04):A0512 FSTA

TI Short-chain **peptide** analysis by high-performance liquid chromatography coupled to electrospray ionization mass spectrometer after derivatization with 9-fluorenylmethyl chloroformate.

AU Gartenmann, K.; Kochhar, S.

CS Correspondence (Reprint) address, S. Kochhar, Nestle Res. Cent., PO Box 44, Vers-chez-les-Blanc, CH-1000 Lausanne 26, Switzerland. Tel. +41 21 7859336. Fax +41 21 7858925. E-mail sunil.kochhar(a)rdls.nestle.com

SO Journal of Agricultural and Food Chemistry, (1999), 47 (12) 5068-5071, 10 ref.

ISSN: 0021-8561

DT Journal

LA English

AB Isolation and characterization of short-chain **peptides** may identify **peptides** with potential for use as **flavour** compounds, as well as allow a better understanding of the Maillard chemistry of **peptides**, and **flavour** and aroma generation in food. In this study, resolution and characterization of short-chain **peptides** (M.sub.r = 200-1000) and free amino acids were demonstrated using precolumn derivatization with 9-fluorenylmethyl chloroformate (Fmoc) followed by reverse-phase HPLC interfaced with electrospray ionization MS. At pH 10, in addition to derivatization at the N terminus,  $\epsilon$ -NH.sub.2 and OH groups of lysine and tyrosine residues, respectively, were also derivatized. Fmoc derivatives showed at least 2 orders of magnitude higher ionization potential in the presence of trifluoroacetic acid. Detection levels for both the free amino acid and **peptide** derivatives were in a few hundred picomoles compared to 10-50 nmol for the underivatized samples. Mass spectra of the **peptides** before or after derivatization showed the presence of only singly charged ions. However, collision-induced dissociation of the derivatized **peptides** showed predominance of b-type ions that are relatively less complicated in assigning the **peptide** sequence.

CC A (Food Sciences)

CT ANALYTICAL TECHNIQUES; FLAVOUR COMPOUNDS; PEPTIDES; ANALYSIS

L9 ANSWER 32 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 2000(03):P0457 FSTA

TI Contribution of low molecular weight water soluble compounds to the taste of cheeses made of cows', ewes' and goats' milk.

AU Molina, E.; Ramos, M.; Alonso, L.; Lopez-Fandino, R.

CS Correspondence (Reprint) address, R. Lopez-Fandino, Inst. de Fermentaciones Ind. (CSIC), Juan de la Cierva 3, 28006 Madrid, Spain. Tel. +34-91-5622900. Fax +34-91-5544853. E-mail rosina(a)ifi.csic.es

SO International Dairy Journal, (1999), 9 (9) 613-621, 23 ref.

ISSN: 0958-6946

DT Journal

LA English

AB Low mol. weight (<1000 Da), water-soluble compounds were isolated from 3 cheeses, prepared from cows', ewes' and goats' milk, respectively. These compounds were identified and their sensory properties examined to



elucidate compounds responsible for producing flavours specific for each cheese. Cheeses were produced using identical manufacturing conditions. Low mol. weight fractions were isolated by gel filtration of water- and trichloroacetic acid-soluble extracts from each cheese. **Peptides** and free amino acids were separated by **HPLC**, whilst headspace analysis of volatile compounds was via GC. Sensory properties were assessed by taste panel. Ewes' and goats' milk cheeses had greater amounts of water-soluble N compared with cows' milk cheese, while ewes' milk cheese contained the highest levels of non-protein N. Total levels of free amino acids were 194, 200 and 178 mg/ml for cows', ewes' and goats' milk cheeses, respectively. Glu, Val, Leu, Gln, Asn, Asp, Thr and Ile were the predominant amino acids. Volatile compounds identified included alcohols, ketones, aldehydes, esters, and volatile free fatty acids. Concentration of these volatile aroma compounds were small and

gradually

decreased in successive gel filtration fractions. **Flavour** and **flavour** intensity of fractions differed between the cheeses; cows' milk cheese fractions were mostly salty and sour whereas in ewes' milk cheese, umami flavours dominated. Umami, astringent and bitter described the goats' milk cheese fractions. It is concluded that although **flavour** intensity correlated with concentration of amino acid and volatile compounds, it was difficult to establish which specific compounds produced a particular **flavour**.

CC P (Milk and Dairy Products)

CT CHEESE; CHEESE VARIETIES; **FLAVOUR COMPOUNDS**; GOATS; SENSORY PROPERTIES; SHEEP; VOLATILE COMPOUNDS; EWE CHEESE; GOAT CHEESE

L9 ANSWER 33 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(11):P1686 FSTA

TI Purification and identification of potentially bioactive **peptides** from enzyme-modified cheese.

AU Haileselassie, S. S.; Lee, B. H.; Gibbs, B. F.

CS Correspondence (Reprint) address, B. H. Lee, Dep. of Food Sci. & Agric. Chem., McGill Univ., Ste-Anne-de-Bellevue, Que. H9X 3V9, Canada

SO Journal of Dairy Science, (1999), 82 (8) 1612-1617, 19 ref.  
ISSN: 0022-0302

DT Journal

LA English

AB Antihypertensive **peptides** inhibiting angiotensin I-converting enzyme [peptidyl-dipeptidase A] have been isolated from enzymic hydrolysates of various food materials, but no information is available on the isolation of antihypertensive **peptides** from enzyme-modified cheese. Several bioactive **peptides**, mainly potential antihypertensive **peptides** from enzyme-modified cheese prepared by commercial and Lactobacillus casei enzymes, were purified and identified. Enzyme-modified cheese samples were prepared by combination of Neutrase® (1883 U/ml), L. casei enzymes (aminopeptidase activity 86.4 leucine aminopeptidase U/g) and Debitrase® (22 leucine aminopeptidase U/g). Water-soluble fractions of the enzyme-modified cheeses that were prepared by different enzymes were subjected to reversed-phase **HPLC** on a Delta Pak C.sub.1.sub.8 column. Each peak was purified on the same column using a binary gradient. 1 peak from the Neutrase® digest, 5 peaks from the Neutrase®-Debitrase® digest and 2 peaks from the Neutrase®-Lactobacillus enzyme digest were purified and identified by API MS. On the basis of their molecular masses, amino acid sequences of purified **peptides** were identified.  $\beta$ -Casomorphin with a sequence like that of  $\beta$ -casein (YFPFGPI f 60-66) was found in the Neutrase® digest. All of the **peptides** purified from the digests with combination of Neutrase® and Debitrase® or Neutrase® and L. casei enzymes contained active sites in their sequences. The presence of sites containing potential antihypertensive **peptides** suggests that the purified **peptides** may have antihypertensive properties. Thus, the enzyme-modified cheese process, mainly designed to produce

**flavour** ingredients, may simultaneously produce bioactive **peptides**, which are considered to be of physiological importance.

CC P (Milk and Dairy Products)

CT CHEESE; HEALTH; **PEPTIDES**; PROTEINASES; ANTIHYPERTENSIVE ACTIVITY; **BIOACTIVE PEPTIDES**; HYDROLYSIS; PEPTIDASES

TN Debitrase; Neutrase

L9 ANSWER 34 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(10):P1359 FSTA

TI Assessing the proteolytic and cheese ripening properties of single strains of *Lactococcus* in miniature cheeses.

AU Shakeel-Ur-Rehman; Pripp, A. H.; McSweeney, P. L. H.; Fox, P. F.

CS Correspondence (Reprint) address, P. F. Fox, Dep. of Food Sci. & Tech., University Coll., Cork, Republic of Ireland. E-mail pff(a)ucc.ie

SO Lait, (1999), 79 (4) 361-383, 35 ref.

ISSN: 0023-7302

DT Journal

LA English

SL French

AB Effects of individual *Lactococcus* strains on cheese ripening and proteolysis were investigated. Strains used in the study were: *L. lactis* subsp. *cremoris* 267 and 255 (Chr Hansen, Republic of Ireland), *L. lactis* subsp. *cremoris* 223, 227, 250, 303, AM1, SK11, HP and Wg2 and *L. lactis* subsp. *lactis* UC317 (obtained from the culture collection of University College, Cork). *L. lactis* subsp. *lactis* UC223 was used as a control strain. The lactococcal strains were used in the manufacture of miniature Cheddar-type cheeses. Composition of the cheeses made with the various starters was similar. Urea-PAGE analysis showed similar profiles of water-insoluble fractions of the cheeses, but water-insoluble fractions varied among starters. 70% ethanol-soluble and -insoluble fractions of the cheeses were analysed by reversed-phase **HPLC**. In all types of analysis, cheese made with *L. lactis* subsp. *cremoris* Wg2 differed from other cheeses. This cheese also achieved the lowest scores for **flavour** and body after 2 and 4 months of ripening. It is concluded that the strain of *Lactococcus* used as a starter can influence the ripening of cheese and its **peptide** and amino acid profile.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; LACTOCOCCUS; PROTEOLYSIS; RIPENING; STARTERS; CHEDDAR CHEESE; CHEESE STARTERS; LACTOCOCCUS LACTIS

L9 ANSWER 35 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(09):P1119 FSTA

TI Effect of starters on proteolysis of Graviera Kritis cheese..

AU Moatsou, G. A.; Kandarakis, I. G.; Georgala, A. K.; Alichanidis, E. S.; Anifantakis, E. M.

CS Lab. of Dairy Tech., Dep. of Food Sci. & Tech., Agric. Univ. Athens, 11855 Athens, Greece. E-mail mg(a)auadec.aua.gr

SO Lait, (1999), 79 (3) 303-315, 38 ref.

ISSN: 0023-7302

DT Journal

LA English

SL French

AB Graviera Kritis cheese is a controlled denomination of origin hard cheese made in Crete from a mixture of goats' and ewes' milk. Effects of starters used in Swiss-style cheeses on the proteolytic profile and quality of Graviera Kritis cheese were examined. The starters compared were: *Streptococcus thermophilus* + *Lactobacillus helveticus* (1:1) + *Propionibacterium freudenreichii* subsp. *shermanii*; *Lactococcus lactis* subsp. *lactis* + *L. lactis* subsp. *cremoris* + *S. thermophilus* + *L. helveticus* (1:1:10:2) + *P. freudenreichii* subsp. *shermanii*; and *L. lactis* subsp. *lactis* + *L. lactis* subsp. *cremoris* + *S. thermophilus* + *L. helveticus* (2.5:2.5:1:1) + *P. freudenreichii* subsp. *shermanii*. A cheese made without starters was used as control. N fractions, urea-PAGE profile, reversed-phase **HPLC** profile and free amino acid

contents were measured during cheese ripening. The use of starter or type of starter did not significantly change the proteolytic profile of cheese ripened at either 15 or 18°C. However, medium and small N fractions were produced more rapidly in cheese made with starter than in that made without starter. Free amino acid contents of cheeses were higher when ripening occurred at 18°C, particularly in cheese made without starter. It is concluded that the use of starters is beneficial in avoiding damage due to extended ripening and **flavour** defects due to accumulation of bitter **peptides**.

CC P (Milk and Dairy Products)  
CT CHEESE VARIETIES; PROTEOLYSIS; RIPENING; STARTERS; CHEESE STARTERS;  
GRAVIERA KRITIS CHEESE

L9 ANSWER 36 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1999(08):S1318 FSTA  
TI Proteolysis of bovine F-actin by cathepsin B.  
AU Hughes, M. C.; O'Neill, E. E.; McSweeney, P. L. H.; Healy, A.  
CS Correspondence (Reprint) address, E. E. O'Neill, Dep. of Food Chem., Univ. Coll., Cork, Republic of Ireland. Tel. +353-21-902-853. Fax +353-21-270-001. E-mail stdk8008(a)bureau.ucc.ic  
SO Food Chemistry, (1999), 64 (4) 525-530, 14 ref.  
ISSN: 0308-8146

DT Journal  
LA English

AB The proteolysis of beef F-actin (from sternomandibularis muscle) by the cysteine proteinase cathepsin B (EC 3.4.22.1) and the specificity of its action on this protein were investigated. Incubation of F-actin (0.5 mg/ml) with cathepsin B (1.65 U/ml) for 6 h at 37°C resulted in almost complete degradation of the protein. 3 degradation products were determined by SDS-PAGE, with molecular masses estimated at 35, 33 and 29 kDa. These **peptides** were produced from cleavage towards the N-terminus of the protein molecule. Reverse phase **HPLC** (RP-**HPLC**) performed on acid soluble fractions of the hydrolysate revealed 13 **peptides** which were identified from their N-terminal sequences and by MS; corresponding F-actin cleavage sites were also identified. Cathepsin B showed a broad specificity, cleaving action at 20 sites. It is concluded that the majority of **peptides** produced during actin degradation arise from the N- and C-termini of the protein. The possible role of these **peptides** in development of **flavour** in fermented meat products, e.g. fermented sausages, is discussed.

CC S (Meat, Poultry and Game)  
CT BEEF; GLOBULINS; PROTEINASES; PROTEOLYSIS; ACTINS; CATHEPSINS

L9 ANSWER 37 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1999(08):J1805 FSTA  
TI Changes in the S-alk(en)yl cysteine sulfoxides and their biosynthetic intermediates during onion storage.  
AU Kopsell, D. E.; Randle, W. M.  
CS Dep. of Hort., Univ. of Georgia, Athens, GA 30602-7273, USA  
SO Journal of the American Society for Horticultural Science, (1999), 124 (2) 177-183, 30 ref.  
ISSN: 0003-1062

DT Journal  
LA English

AB Onion (*Allium cepa* L.) pungency changes during storage. To better understand these **flavour** changes, 7 onion cv. representing different storage duration, photoperiodic requirement, and **flavour** intensity were greenhouse grown and the bulbs stored for 3 or 6 months at 5 ± 3°C, 0.8-1.1 kPa vapour pressure deficit. Bulbs were evaluated using **HPLC** quantification for changes in S-alk(en)yl cysteine sulfoxide (ACSO) **flavour** precursors and  $\gamma$ -glutamyl **peptide** ( $\gamma$ -GP) biosynthetic intermediates before storage and monthly thereafter. Before and during storage, cv.

differed in total ACSO, (+)S-methyl-L-cysteine sulfoxide (MCSO), trans-(+)-S-(1-propenyl)-L-cysteine sulfoxide (PRENCISO), (+)propyl-L-cysteine sulfoxide (PCSO), S-2 carboxypropyl glutathione (2-CARB), and  $\gamma$ -L-glutamyl-S-(1-propenyl)-L-cysteine sulfoxide ( $\gamma$ GPESCO) concentration. During storage MCSO generally decreased while PRENCISO increased in concentration for most cv. The linear increase in PRENCISO concentration during storage was accompanied by a linear decrease in  $\gamma$ GPESCO concentration. While not measured in this study, these trends indicate  $\gamma$ -glutamyl transpeptidase activity throughout bulb storage.  $\gamma$ -Glutamyl transpeptidase was previously reported to be active only in the later stages of bulb storage or during bulb sprouting. Changes in ACSO and  $\gamma$ -GP compounds during storage did not follow previously reported changes during storage for enzymically formed pyruvic acid for these cv. To better understand what causes **flavour** changes in onions during storage, future investigations should include analysis of the enzymes involved in **flavour** development and ACSO hydrolysis products.

CC J (Fruits, Vegetables and Nuts)

CT AROMA; **FLAVOUR**; **FLAVOUR COMPOUNDS**; ONIONS; ORGANIC SULPHUR COMPOUNDS; STORAGE; CV; CYSTEINE SULPHOXIDES; PUNGENCY

L9 ANSWER 38 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(07):S1126 FSTA

TI Hydrolysis of pork muscle sarcoplasmic proteins by *Lactobacillus curvatus* and *Lactobacillus sake*.

AU Fadda, S.; Sanz, Y.; Vignolo, G.; Aristoy, M. C.; Oliver, G.; Toldra, F.  
CS Correspondence (Reprint) address, F. Toldra, Inst. de Agroquímica y Tec. de Alimentos (CSIC), Apt. 73, 46100 Burjassot, Valencia, Spain. Tel. 34 96 3900022. Fax 34 96 3636301. E-mail ftoldra(a)iata.csic.es

SO Applied and Environmental Microbiology, (1999), 65 (2) 578-584, 32 ref. ISSN: 0099-2240

DT Journal

LA English

AB [Proteolytic activities of different enzyme combinations from *Lactobacillus curvatus* and *L. sake* strains on pork sarcoplasmic proteins were determined to predict suitability of these strains or their enzymes as starter cultures or additives, respectively, for processing of dry fermented sausages.] *L. curvatus* CECT 904 and *L. sake* CECT 4808 were selected on the basis of their proteolytic activities against synthetic substrates. Effects of whole cells, cell extracts and a combination of both enzymic sources on muscle sarcoplasmic proteins were determined by SDS-PAGE and reverse-phase **HPLC** analyses. Strains of both species displayed proteinase activities on 5 sarcoplasmic proteins. Inoculation of whole cell caused a degradation of **peptides**, whereas addition of cell extracts resulted in the generation of both hydrophilic and hydrophobic **peptides**. This phenomenon was remarkably more pronounced when *L. curvatus* was involved. Whole cells also consumed a great amount of free amino acids, while the addition of intracellular enzymes contributed to their generation. *L. sake* accounted for a greater release of free amino acids. In general, cell viability and also proteolytic events were promoted when cell suspensions were provided with cell extracts as an extra source of enzymes. [It is concluded that observed differences in proteolytic activities between the strains may lead to distinct **flavour** profiles for final products.]

CC S (Meat, Poultry and Game)

CT LACTOBACILLUS; PORK; PROTEINASES; PROTEOLYSIS; SAUSAGES; STARTERS; FERMENTED SAUSAGES; LACTOBACILLUS CURVATUS; LACTOBACILLUS SAKE

L9 ANSWER 39 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(07):P0856 FSTA

TI Control of debittering activity of cheese starters.

AU Smit, G.; Boven, A. van; Rippen, M.; Kruyswijk, Z.

CS Cheese Science '98 Symposium; Dep. of Product Functionality, Sect. Flavour & Starters, Netherlands Inst. for Dairy Res. (NIZO), PO Box 20, 6710 BA

Ede, Netherlands. E-mail gsmit(a)nizo.nl

SO Australian Journal of Dairy Technology, (1998), 53 (2) 113  
ISSN: 0004-9433

DT Conference

LA English

AB A laboratory assay was developed to measure the debittering activity of cheese starter cultures. A bitter-tasting **peptide** was used as marker and incubated with the cultures. Degradation of the **peptide** was monitored by reversed phase HPLC. Several cultures were tested and large differences in activity were found between them. Using this assay, it was possible to isolate cultures with strong debittering activities. It was also established that growth conditions of the cultures can affect their debittering activity. Cheese experiments confirmed that the laboratory assay can be used to predict bitter formation in cheese and thereby offers possibilities to prevent this defect. [Abstracts of further contributions from this conference are published in electronic formats of the FSTA database and may be traced via the corporate authors (CA) field, under Cheese Science '98 [Symposium]. See also 1999-Pj814.]

CC P (Milk and Dairy Products)

CT ANALYTICAL TECHNIQUES; CHEESE; **FLAVOUR**; STARTERS; ASSAY; BITTERNESS; CHEESE STARTERS

L9 ANSWER 40 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(06):J1298 FSTA

TI Differential hydrolysis of alk(en)yl cysteine sulfoxides by alliinase in onion macerates: **flavour** implications.

AU Lancaster, J. E.; Shaw, M. L.; Randle, W. M.

CS New Zealand Inst. of Crop & Food Res., Private Bag 4704, Christchurch, New Zealand

SO Journal of the Science of Food and Agriculture, (1998), 78 (3) 367-372, 20 ref.  
ISSN: 0022-5142

DT Journal

LA English

AB Hydrolysis of S-alk(en)yl cysteine sulfoxides (ACSO) (i.e. propenyl cysteine sulfoxide (PrenCSO), propyl cysteine sulfoxide (PCSO) and methyl cysteine sulfoxide (MCSO)) by alliinase (alliin lyase; EC 4.4.1.4) in macerated onion bulb tissue was investigated. ACSO and  $\gamma$ -glutamyl **peptides** (which are biosynthetic intermediates of ACSO) were determined in crushed bulbs by taking onion juice samples at intervals of 5, 20 and 60 s, 5 min and 1 and 2 h and measured by HPLC, while pyruvate, which is an enzymic product of alliinase hydrolysis of ACSO, was evaluated by spectrometry. Results showed that PrenCSO was 100% hydrolysed after 5-20 s bulb maceration, although hydrolysis of PCSO and MCSO was incomplete, with approx. 50% PCSO and MCSO remaining after 5 s maceration and no further hydrolysis occurring afterwards. Addition of pyridoxal phosphate cofactor to onion juice enhanced ACSO hydrolysis; however, dissolving purified alliinase in the pyridoxal phosphate-containing buffer and adding to onion juice did not further enhance ACSO hydrolysis. In addition,  $\gamma$ -glutamyl **peptides** were unexpectedly hydrolysed following maceration, while levels of enzymically formed pyruvate were produced in non-stoichiometric quantities. It is concluded that inhibition of the alliinase reaction may occur in onion macerates.

CC J (Fruits, Vegetables and Nuts)

CT **FLAVOUR COMPOUNDS**; LYASES; MACERATION; ONIONS; ORGANIC SULPHUR COMPOUNDS; ALLIIN LYASES; CYSTEINE SULFOXIDES; HYDROLYSIS

L9 ANSWER 41 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(06):H1155 FSTA

TI Production of tasty brewer's yeast extract by simulated moving-bed system chromatography.

AU Matsushita, I.; Muramoto, Y.; Ozaki, S.; Tashiro, T.

CS Res. & Dev., Yamaki Co. Ltd., Kominato 1698-6, Iyo-shi, Ehime 799-3194, Japan

SO Journal of the Japanese Society for Food Science and Technology (Nippon Shokuhin Kagaku Kogaku Kaishi), (1999), 46 (2) 75-80, 15 ref.  
ISSN: 1341-027X

DT Journal

LA Japanese

SL English

AB An extract solution was prepared from brewers' yeast through proteolysis with proteinases and the autolysate of *Aspergillus oryzae*. The solution was fractionated by simulated moving-bed system chromatography, and was then spray-dried. Amino acids and nucleic acids in the extract powder were analysed by **HPLC** using columns packed with Shim-pack ISC-07/S 1504 Na type and WAX-1 and the extract powder was compared with conventional brewers' yeast extract by sensory analysis. The fractionated extract obtained by chromatography contained increased levels of **peptides** and nucleic acids and had improved **flavour**.  
[From En summ.]

CC H (Alcoholic and Non-Alcoholic Beverages)

CT CHROMATOGRAPHY; EXTRACTS; YEASTS BREWERS; BREWERS YEASTS

L9 ANSWER 42 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(04):S0629 FSTA

TI Free amino acids and dipeptides in porcine muscles: differences between 'red' and 'white' muscles.

AU Cornet, M.; Bousset, J.

CS INRA, Lab. de Recherches sur la Viande, 78352 Jouy en Josas Cedex, France.  
Tel. 0033-1-34-65-21-21. Fax 0033-1-34-65-21-05. E-mail  
monique.Cornet(a)jouy.inra.fr

SO Meat Science, (1999), 51 (3) 215-219, 21 ref.

ISSN: 0309-1740

DT Journal

LA English

AB Small samples of 3 muscles from 18 swine carcasses were removed within 30 min of slaughter. Muscles chosen to represent white glycolytic muscle (*longissimus dorsi*, LD), intermediate muscle (*trapezius*, TP) and muscle with a very high level of slow-twitch oxidative fibres (*masseter*, MA) were used. Proteins were extracted and amino acid analyses performed by **HPLC**. 23 amino acids and 2 dipeptides were identified and quantified; cystine and cysteine were not quantified. The 3 muscles showed the same free amino acids and dipeptides, but at differing levels. All 3 showed high levels of alanine (representing alanine and histidine which could not be resolved separately) carnosine, taurine, glutamine and glycine and relatively high glutamic acid contents. Muscle type affected levels of 10 of the 25 measured compounds; an animal effect was observed on levels of 6 amino acids. LD contained 7x more carnosine and 3x more  $\beta$ -alanine than MA; levels of aspartic acid, glutamine and taurine were higher in MA than LD. TP showed intermediate levels for these compounds. Glycine, ornithine and phosphoethanolamine levels differed significantly between MA and the other 2 muscles, whereas valine concentration varied between MA and LD, and alanine levels between LD and the other 2. Thus, muscle contents of several amino acids were closely related to metabolic type of fibres. Overall, oxidative muscles contained more aspartic acid, glutamine and taurine, and glycolytic muscles contained mostly  $\beta$ -alanine and carnosine. Implications for meat **flavour** are outlined.

CC S (Meat, Poultry and Game)

CT AMINO ACIDS; **PEPTIDES**; PORK; DIPEPTIDES

L9 ANSWER 43 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(02):P0229 FSTA

TI Isolation and identification of **peptides** from the diafiltration permeate of the water-soluble fraction of Cheddar cheese.

AU Fernandez, M.; Singh, T. K.; Fox, P. F.

CS Dep. de Nutr. y Bromatologia III (Hygiene y Tec. de los Alimentos), Fac. de Vet., Univ. Complutense de Madrid, 28040 Madrid, Spain. Tel. +34-1-3943751. Fax +34-1-3943743. E-mail manuela(a)eucmax.sim.ucm.es

SO Journal of Agricultural and Food Chemistry, (1998), 46 (11) 4512-4517, 29 ref.  
ISSN: 0021-8561

DT Journal

LA English

AB The water-soluble extract of a mature Cheddar cheese was fractionated by diafiltration using 10 kDa nominal mol. weight cut-off membranes. The permeate had a savoury, cheesy taste, whereas the retentate was bland. The permeate was resolved into 9 fractions by gel permeation chromatography on Sephadex G-25. Fractions I-III contained only **peptides**, whereas fractions IV-IX comprised mainly free amino acids. Fraction IV contained a mixture of all amino acids except Phe (fraction V), Tyr (fraction VI) and Trp (fraction IX). Fraction III, which had the savoury cheesy taste of the permeate, was dominated by one major peak with several minor ones. Fraction III was rechromatographed on a Sephadex G-25 column, and a number of **peptides** were isolated from subfractions thereof by reversed-phase **HPLC** and characterized by N-terminal amino acid sequencing and MS. Results showed that starter bacteria cell-envelope proteinase, endopeptidases and aminopeptidases play an important role in degradation of the primary proteolytic products produced by chymosin and plasmin from  $\alpha$ .sub.s.sub.1-,  $\alpha$ .sub.s.sub.2- and  $\beta$ -caseins.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; **FLAVOUR**; FRACTIONATION; **PEPTIDES**; CHEDDAR CHEESE

L9 ANSWER 44 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(01):T0019 FSTA

TI Chemical synthesis and characterization of the sweet protein mabinlin II.

AU Kohmura, M.; Ariyoshi, Y.

CS Cent. Res. Lab., Ajinomoto Co. Inc., 1-1 Suzuki-cho, Kawasaki-ku, Kawasaki 210, Japan

SO Biopolymers, (1998), 46 (4) 215-223, 25 ref.

DT Journal

LA English

AB Procedures for synthesis of the sweet protein mabinlin II are described. Mabinlin II occurs in the seeds of the Chinese plant Capparis masaikai. It is a weakly sweet, thermostable heterodimeric protein, the A chain consisting of 33 amino acid residues and the B chain containing 72 amino acids. Chemical synthesis of the protein is made difficult by the presence of 2 intramolecular and 2 intermolecular disulphide bonds. The A and B chains were synthesized using an automated **peptide** synthesizer. Folding and disulphide formation was followed by ion-exchange **HPLC** purification of the protein. A 0.1% solution of the synthetic mabinlin II tasted astringent-sweet.

CC T (Additives, Spices and Condiments)

CT **FLAVOUR**; SWEETENERS; MABINLIN II; STRUCTURE; SWEETNESS

L9 ANSWER 45 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1999(01):R0043 FSTA

TI Contents of glutathione in seafoods and its **flavor** characteristics.

AU Ueda, Y.; Hibino, G.; Kohmura, M.; Kuroda, M.; Watanabe, K.; Sakaguchi, M.

CS Food Res. & Dev. Lab., Ajinomoto Co. Inc., Suzukicho, Kawasaki, Kanagawa 210-8681, Japan

SO Nippon Suisan Gakkaishi, (1998), 64 (4) 710-714, 16 ref.  
ISSN: 0021-5392

DT Journal

LA Japanese

SL English

AB Glutathione and glutathione disulphide were determined by **HPLC**

in 9 species of fish, 2 species of bivalves, 2 species of squid, 2 species of shrimps and 1 species of sea urchin. The highest glutathione concentration recorded (29.05 mg/100 g) was in scallops, *Patinopecten yessoensis*; the lowest concentration (not detected) were in squid and short necked clam (*Ruditapes philippinarum*). Among fish, the highest concn was in coho salmon (*Oncorhynchus kisutch*) and the lowest in yellowtail (*Seriola quinqueradiata*). Glutathione disulphide was detected in only 5 species: bigeye tuna (*Thunnus obesus*), skipjack tuna (*Katsuwonus pelamis*), sardine (*Sardinops melanosticta*), coho salmon and sea urchins (*Strongylocentrotus intermedius*). Concentration ranged from 0.38 mg/100 g in coho salmon to 4.13 mg/100 g in skipjack tuna. Glutathione concentration were above the taste threshold only in scallops and coho salmon. Contribution of glutathione disulphide to **flavour** of the sea foods was less than that of glutathione. Effects of addition of glutathione to a glutathione-free synthetic scallop extract were assessed. Addition of glutathione at 29 mg/100 ml (corresponding to the concentration naturally present in scallops) increased sweetness and umami intensity, and also influenced other sensory properties. It is concluded that glutathione may contribute to the **flavour** of scallops.

CC R (Fish and Marine Products)  
CT FISH; **FLAVOUR**; MOLLUSCS; ORGANIC SULPHUR COMPOUNDS;  
**PEPTIDES**; SHRIMPS; SQUID; BIVALVES; GLUTATHIONE

L9 ANSWER 46 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1998(09):P1552 FSTA  
TI Effect of adding *Propionibacterium shermanii* NCDO 853 or *Lactobacillus casei* ssp. *casei* IFPL 731 on proteolysis and **flavor** development of Cheddar cheese.  
AU Fernandez-Espla, M. D.; Fox, P. F.  
CS Inst. del Frio (CSIC), Ciudad Universitaria s/n, 28040 Madrid, Spain  
SO Journal of Agricultural and Food Chemistry, (1998), 46 (4) 1228-1234, 42 ref.  
ISSN: 0021-8561  
DT Journal  
LA English  
AB Proteolysis and **flavour** development were monitored in Cheddar cheese made from milk inoculated with *Lactobacillus casei* subsp. *casei* IFPL 731 (control; 10.sup.4 cfu/ml cheesemilk) or *Propionibacterium shermanii* NCDO 853 (experimental cheese) at 3 different levels (10.sup.5, 10.sup.6 and 10.sup.7 cfu/ml cheese milk). The pH and chemical composition of the experimental cheese were not affected by addition of *L. casei* or *P. shermanii*. Cheeses inoculated with *L. casei* or *P. shermanii* at low and medium levels received the best scores for **flavour** development and body. Addition of *P. shermanii* at a high level caused a sweet and nutty **flavour**. Urea-PAGE, nitrogen content of cheese water-soluble extracts and reversed phase HPLC showed minor differences in proteolysis between control and experimental cheeses. Major differences were found at the amino acid level. In general, amino acid content increased as the *Propionibacterium* inoculum increased in experimental cheeses. A decrease in the content of hydrophobic **peptides** was observed in cheeses inoculated with *P. shermanii* at medium and high levels. The increase in amino acid content was not apparent when *L. casei* was added to cheese, possibly due to a lack of cell lysis. It is concluded that there is an optimum inoculum level of *P. shermanii* above which the **flavour** of Cheddar cheese resembles that of Swiss-type cheese.  
CC P (Milk and Dairy Products)  
CT CHEESE VARIETIES; **FLAVOUR**; LACTOBACILLUS; PROPIONIBACTERIUM; PROTEOLYSIS; CHEDDAR CHEESE

L9 ANSWER 47 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1998(07):P1161 FSTA  
TI **Peptide** accumulation and bitterness in Cheddar cheese made using single-strain *Lactococcus lactis* starters with distinct proteinase



specificities.

- AU Broadbent, J. R.; Strickland, M.; Weimer, B. C.; Johnson, M. E.; Steele, J. L.  
CS Dep. of Nutr. & Food Sci., Western Cent. for Dairy Res., Utah State Univ., Logan, UT 84322-8700, USA  
SO Journal of Dairy Science, (1998), 81 (2) 327-337, 24 ref.  
ISSN: 0022-0302  
DT Journal  
LA English  
AB **Peptide** accumulation and bitterness in reduced and full-fat Cheddar cheeses that were manufactured with single-strain *Lactococcus lactis* starters that had distinct cell envelope proteinase specificities were investigated. Micellar electrokinetic capillary electrophoresis of aqueous cheese extracts detected 3 large peaks, designated O, P and Q, that eluted with **peptide** standards and increased in area during cheese maturation in a pattern that was distinct for each starter. Regression analysis of bitter **flavour** scores from trained sensory panels and individual O-Q peak areas suggested that peaks P and Q had a negative and positive correlation, respectively, to this defect. Then, **HPLC**, capillary electrophoresis, **peptide** sequencing and MS were used to identify 5 **peptides** from  $\alpha$ .sub.s.sub.1-casein (CN), one from  $\beta$ -CN and one from  $\alpha$ .sub.s.sub.2-CN that accumulated in 6-month-old cheeses. Most of the **peptides** derived from  $\alpha$ .sub.s.sub.1-CN (f 1-23) accumulated in a manner that corresponded with starter proteinase specificity. All of the **peptides** identified in the study except  $\alpha$ .sub.s.sub.2-CN (f 1-21) eluted in the O-P-Q region of micellar electrokinetic capillary electropherograms. The  $\alpha$ .sub.s.sub.1-CN (f 1-16),  $\alpha$ .sub.s.sub.1-CN (f 1-17) and  $\beta$ -CN (f 193-209) eluted in peak O,  $\alpha$ .sub.s.sub.1-CN (f 1-13) and  $\alpha$ .sub.s.sub.1-CN (f 1-14) eluted in peak P, and  $\alpha$ .sub.s.sub.1-CN (f 1-9) eluted in peak Q.  
CC P (Milk and Dairy Products)  
CT BITTER COMPOUNDS; CHEESE VARIETIES; **FLAVOUR**; LACTOCOCCUS; **PEPTIDES**; PROTEINASES; **BITTER PEPTIDES**; BITTERNESS; CHEDDAR CHEESE

- L9 ANSWER 48 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1998(05):S0769 FSTA  
TI Non-volatile components effects on quality of 'Serrano' dry-cured ham as related to processing time.  
AU Flores, M.; Aristoy, M. C.; Spanier, A. M.; Toldra, F.  
CS Correspondence (Reprint) address, A. M. Spanier, ARS, USDA, S. Reg. Res. Cent., 1100 Robert E. Lee Blvd., New Orleans, LA 70124, USA  
SO Journal of Food Science, (1997), 62 (6) 1235-1239, 41 ref.  
ISSN: 0022-1147  
DT Journal  
LA English  
AB Following long dry-curing periods, Spanish 'Serrano' ham develops a specific 'dry cured ham' **flavour**. To determine the effects of length of curing on **flavour** generation, replicate hams were processed for 7 or 12 months prior to amino acid, **peptide** and **flavour** evaluation by reverse phase **HPLC**, capillary zone electrophoresis and sensory analysis, respectively. Generation of dry cured and pork flavours correlated with the accumulation of amino acids. The relation of these components with sensory descriptors was examined by factor analysis. Results indicated that combinations and proportions of taste-active components produced the specific dry cured **flavour** characteristic rather than an accumulation of any single **flavour** component.  
CC S (Meat, Poultry and Game)  
CT CURING; **FLAVOUR**; HAM; DRY CURED HAM

- L9 ANSWER 49 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1998(03):S0441 FSTA  
 TI Evaluation of **peptides** generated in Italian-style dry-cured ham during processing.  
 AU Hansen-Moller, J.; Hinrichsen, L.; Jacobsen, T.  
 CS Danish Meat Res. Inst., Maglegaardsvej 2, DK-4000 Roskilde, Denmark  
 SO Journal of Agricultural and Food Chemistry, (1997), 45 (8) 3123-3128, 16 ref.  
 ISSN: 0021-8561  
 DT Journal  
 LA English  
 AB Low mol. weight nitrogenous compounds (M.sub.w <3000 Da) were measured from 29 Parma hams at different production stages (i.e. 3, 25, 125, 211, 365 and 485 days after slaughter). Precolumn derivatization with AQC and reversed phase **HPLC** of the samples revealed that the content of low mol. weight nitrogenous compounds increased during processing of the hams. Principal component analysis of the non-amino acid peaks showed 5 groupings of the samples corresponding to the different production stages. In the first 365 days of processing 5 different **peptide** peaks are formed. Post ripening lead to the formation of 6 additional **peptide** peaks. Partial least squares modelling of the major **peptide** peaks and sensory data show that the formation of **peptides** is highly correlated to the **flavour** formation of Parma ham.  
 CC S (Meat, Poultry and Game)  
 CT **FLAVOUR**; **HAM**; **PEPTIDES**; **RIPENING**; **DRY CURED HAM**

L9 ANSWER 50 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 1998(02):P0353 FSTA  
 TI Isolation and identification of low molecular weight **peptides** in Gouda cheese.  
 AU Igoshi, K.; Jiromaru, N.; Kobayashi, H.; Arima, S.  
 CS Fac. of Agric., Kyushu Tokai Univ., Choyo-son, Kumamoto-ken 869-14, Japan  
 SO Animal Science and Technology, (1997), 68 (4) 385-388, 8 ref.  
 ISSN: 0021-5309  
 DT Journal  
 LA English  
 AB Proteolysis during cheese ripening is related to the development of texture and **flavour**; **peptides** and amino acids produced by proteolysis affect cheese quality. In this study, low mol. weight **peptides** formed in Gouda cheese during ripening were isolated and identified. Gouda cheese samples were studied after 0, 1 or 4 months of ripening. 70% ethanol soluble extracts were prepared from the cheese samples. Extracts were fractionated by **HPLC** fitted with an ODS column and UV detection. Number and quantity of **peptides** extracted increased with increasing duration of ripening. For 4-months ripened Gouda cheese, 10 low mol. weight **peptides** and amino acids were identified from **HPLC** profiles as follows: Tyr, Phe, Trp,  $\alpha$ .sub.s.sub.1-casein (f 1-7), (f 1-9), (f 1-13), (f 1-14), (f 1-16), (f 1-17) and  $\beta$ -casein (f 47-52). With the exception of  $\beta$ -casein (f 47-52) and the amino acids, these **peptides** were fragments of  $\alpha$ .sub.s.sub.1-casein (f 1-23) which was formed from  $\alpha$ .sub.s.sub.1-casein by chymosin during the initial stage of cheesemaking. It is suggested that the N-terminal **peptides** of  $\alpha$ .sub.s.sub.1-casein identified in Gouda cheese, are produced from  $\alpha$ .sub.s.sub.1-casein (f 1-23) by the action of proteolytic enzymes from lactic acid bacteria in the cheese.  
 CC P (Milk and Dairy Products)  
 CT **CHEESE VARIETIES**; **PEPTIDES**; **RIPENING**; **GOUDA CHEESE**

L9 ANSWER 51 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 1997(09):P0140 FSTA  
 TI Effect of adding free amino acids to Cheddar cheese curd on proteolysis, **flavour** and texture development.  
 AU Wallace, J. M.; Fox, P. F.

CS Dep. of Food Chem., Univ. Coll., Cork, Republic of Ireland  
SO International Dairy Journal, (1997), 7 (2/3) 157-167, many ref.  
ISSN: 0958-6946  
DT Journal  
LA English  
AB Effect of addition of free amino acids (cas-amino acids; 0-63 mmol/kg curd) to Cheddar cheese curd during cheese manufacture on **flavour**, texture and proteolysis was examined during a 6-month ripening period. Urea-PAGE indicated that proteolysis was similar in experimental and control (without added amino acids) cheeses. Reversed phase-HPLC analysis of water-soluble cheese extracts indicated only slight qualitative differences between the cheeses. However, in cheeses with intermediate concentration (21-42 mmol/kg) of added amino acids, there were higher concentration of all **peptides** than in control cheeses or those with the highest concentration (63 mmol/kg) of added amino acids. During the first 5 wk of ripening, concentration of NH.sub.3, proline and lysine decreased in all cheeses, while only minor increases were observed in other amino acids, especially in experimental cheeses; results suggest a slow production or rapid utilization of amino acids during this part of the ripening period. Between 3 and 6 months of ripening, arginine concentration decreased, concentration of histidine, isoleucine and tyrosine remained fairly stable, and concentration of other amino acids and NH.sub.3 increased rapidly, particularly those of glutamic acid, valine, leucine, phenylalanine and lysine. Experimental cheeses with the highest concentration of total amino acids maintained the highest concentration of total amino acids throughout ripening.

In other experimental cheeses, and in the control, release of amino acids increased throughout the ripening period (particularly of serine, leucine and phenylalanine). It is concluded that, after a 6-month ripening period, cheeses with intermediate concentration of added amino acids develop superior **flavour** and texture compared with controls or cheeses with the highest concentration of added cas-amino acids.

CC P (Milk and Dairy Products)  
CT ACIDS; AMINO ACIDS; CHEESE VARIETIES; DAIRY PRODUCTS; ORGANIC NITROGEN COMPOUNDS; RIPENING; CHEDDAR CHEESE

L9 ANSWER 52 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1997(08):P0089 FSTA  
TI Relationship between level of hydrophobic **peptides** and bitterness in cheese made from pasteurized and raw milk.  
AU Gomez, M. J.; Garde, S.; Gaya, P.; Medina, M.; Nunez, M.  
CS Dep. de Tec. de Alimentos, CIT-INIA, Carretera de la Coruna Km 7, E-28040 Madrid, Spain  
SO Journal of Dairy Research, (1997), 64 (2) 289-297, 23 ref.  
ISSN: 0022-0299  
DT Journal  
LA English  
AB Hydrophobic and hydrophilic **peptides** in the water-soluble fraction of 20 batches of Hispanico cheese made from pasteurized and raw milk were determined by reversed-phase HPLC, with detection at 214 and 280 nm. Cheese **flavour** characteristics were evaluated by a sensory panel, and regressions of bitterness scores on levels of hydrophobic and hydrophilic **peptides** and their ratio were calculated. The best fitting relationship for pasteurized milk cheese was the linear regression of mean panel bitterness scores on hydrophobic **peptides** at 280 nm ( $r_{\text{sup.2}} = 0.791$ ). The determination coefficient for the regression of hydrophobic **peptides** at 280 nm on panellist bitterness scores ( $r_{\text{sup.2}} = 0.356$ ) was lower, owing to individual differences in the perceived intensity of bitterness. In the case of raw milk cheese, the respective determination coefficients were 0.203 for panel scores and 0.034 for individual panellist scores.

CC P (Milk and Dairy Products)  
CT CHEESE; CHEESE VARIETIES; DAIRY PRODUCTS; **FLAVOUR**;

**PEPTIDES; PROTEINS; SENSORY PROPERTIES; BITTERNESS**

- L9 ANSWER 53 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1997(05):T0022 FSTA  
TI Analysis of derivatized **peptides** using high-performance liquid chromatography and capillary electrophoresis.  
AU Antonis, K. M. de; Brown, P. R.  
CS Univ. of Rhode Island, Kingston, RI, USA  
SO Advances in Chromatography, (1997), 37, 425-452, 72 ref.  
ISSN: 0065-2415  
DT General Review  
LA English  
AB Plant **peptides** are used in the food industry as sweeteners, bulking agents and **flavour** enhancers. Types of derivatization agents for **peptides** are reviewed, and applications for **HPLC** and capillary electrophoresis analysis of derivatized **peptides** are considered (including **peptide** mapping, model synthetic **peptides** and analysis of physiological, pharmaceutical, chiral and food samples). Food/beverage applications mentioned include analyses of monosodium glutamate and aspartame.  
CC T (Additives, Spices and Condiments)  
CT ADDITIVES; ANALYTICAL TECHNIQUES; ELECTROPHORESIS; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; REVIEWS; CAPILLARY ELECTROPHORESIS; FOODS; **HPLC**
- L9 ANSWER 54 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1997(05):G0021 FSTA  
TI Bitterness intensity of soybean protein hydrolysates - chemical and organoleptic characterization.  
AU Lovsin-Kukman, I.; Zelenik-Blatnik, M.; Abram, V.  
CS Biotech. Fac., Dep. of Food Tech., S10-1000 Ljubljana, Slovenia  
SO Zeitschrift fuer Lebensmittel-Untersuchung und -Forschung, (1996), 203 (3) 272-276, 22 ref.  
ISSN: 0044-3026  
DT Journal  
LA English  
AB Soluble and isoelectric soluble soy protein hydrolysates were prepared using Alcalase, to a degree of hydrolysis of 3-15%. Bitterness intensity of the hydrolysates obtained was assessed on a 5-point scale. Average relative molecular masses of **peptides** in the hydrolysates were determined by the trinitrobenzenesulphonic acid method. Ranges of values were: soluble hydrolysates 1400-2250; isoelectric soluble hydrolysates 800-1313; and the hydrophobic **peptide** fraction 400-575. Molecular mass distribution of **peptides** in the hydrolysates and their hydrophobic **peptide** fractions were determined by gel permeation **HPLC** using a Zorbax Bio Series GF-250 column. Results suggest that bitterness of soy protein hydrolysates prepared by Alcalase treatment is due to hydrophobic **peptides** of relative molecular mass <1000.  
CC G (Catering, Speciality and Multicomponent Foods)  
CT **FLAVOUR**; PROTEINS; SENSORY PROPERTIES; SOY PROTEINS; VEGETABLE PRODUCTS; BITTERNESS
- L9 ANSWER 55 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1997(04):P0095 FSTA  
TI The effect of liposome-encapsulated cyprosins on Manchego cheese ripening.  
AU Picon, A.; Serrano, C.; Gaya, P.; Medina, M.; Nunez, M.  
CS Dep. de Tec. de Alimentos, Cent. de Investigacion y Tec., Inst. Nacional de Investigaciones Agrarias, Carretera de La Coruna Km 7, Madrid 28040, Spain  
SO Journal of Dairy Science, (1996), 79 (10) 1699-1705, 28 ref.  
ISSN: 0022-0302  
DT Journal  
LA English  
AB Addition of encapsulated cyprosins to milk was examined in terms of their

effect on the properties and ripening of Manchego cheese. Cyprosins, proteinases present in cardoon rennet, were extracted from dried flowers of cardoon (*Cynara cardunculus* L.) and encapsulated in dehydration-rehydration liposomes. Liposomes were added to pasteurized milk to accelerate the ripening of Manchego cheese. Encapsulated proteinases had no effect on whey composition, but DM and protein content were lower in 1-day-old experimental cheese than in the control cheese. Enhancement of proteolysis by encapsulated cyprosins was evident 24 h after manufacture; 38.3% of  $\alpha$ -sub.s-casein and 47.7% of  $\beta$ -casein that were initially present in milk had been degraded in 1-day-old experimental cheese, and 20.3 and 37.5%, respectively, in control cheese. In 1-day-old cheese, amounts of N that were soluble at pH 4.6, and soluble in TCA and in phosphotungstic acid were 15.70, 5.47 and 2.09% in experimental cheese and 9.32, 4.16 and 1.34% in control cheese, respectively. Hydrophobic and hydrophilic **peptides** were separated by **HPLC** and measured at 214 and 280 nm. Their ratio and measured levels were higher in experimental cheese than in control cheese after 1 day. However, some of the indices of proteolysis were higher in the control cheese than in experimental cheese after 60 days of ripening. Experimental cheese was softer than control cheese 24 h after manufacture, but was the same in both cheeses thereafter. Addition of encapsulated cyprosins to milk perceptibly accelerated development of **flavour** intensity in experimental cheese during 5 days of ageing, without enhancing bitterness.

CC P (Milk and Dairy Products)  
CT CHEESE VARIETIES; DAIRY PRODUCTS; ENZYMES; PROTEINASES; RIPENING;  
VEGETABLES SPECIFIC; CARDOONS; MANCHEGO CHEESE

L9 ANSWER 56 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1997(03):B0115 FSTA  
TI Large-scale purification of recombinant monellin from yeast.  
AU In Ho Kim; Kook Jin Lim  
CS Dep. of Chem. & Biochem. Eng., Univ. of California, Irvine, CA 92717, USA  
SO Journal of Fermentation and Bioengineering, (1996), 82 (2) 180-182, 13  
ref.  
DT Journal  
LA English  
AB Monellin is a well-characterized sweet protein isolated from serendipity berries and is approx. 100 000x sweeter than sugar on a molar basis. Its amino acid sequence and crystal structure have been investigated, and a combined monellin gene has been synthesized encoding the A- and B-chains as a single **peptide** and utilized to enhance the **flavour** of fruits and vegetables by expressing chimeric monellin genes in transgenic plants. Large-scale purification of single-chain monellin expressed in a recombinant yeast strain, AB110, using process-scale equipment was studied. Recombinant sweet-tasting monellin was purified on a large scale (50 g) from yeast strain AB110, with a purification yield of 45% and purity of 95%, as determined by **HPLC** gel filtration. Since monellin has been shown to be a very basic protein, its basicity was utilized as an efficient downstream processing method. Acid treatment of the supernatant with 5M HCl was used to remove yeast-contaminating proteins by inducing denaturation and precipitation of these proteins. This purification step proved to be very efficient, since most of yeast proteins have isoelectric points around pH 6, while monellin is a very basic protein (pI = 9.3).

CC B (Biotechnology)  
CT ADDITIVES; BIOTECHNOLOGY; DOWNSTREAM PROCESSING; FUNGI; PROCESSING;  
SWEETENERS; YEASTS; MONELLIN

L9 ANSWER 57 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1997(03):A0006 FSTA  
TI The contribution of low- and nonvolatile materials to the **flavor** of foods.  
AU Pickenhagen, W. (Editor); Chi-Tang Ho (Editor); Spanier, A. M. (Editor)

CS 362 S. Schmale Rd., Carol Stream, IL 60188-2787, USA; Allured Publishing Corp. Price \$95.00

SO (1996), 342pp. ISBN 0-931710-50-2, many ref.

DT Book

LA English

AB This book is based on a seminar at the Division of Agricultural and Food Chemistry, American Chemical Society National Meeting held in Chicago, IL, USA on 20-24 Aug. 1995. The book, which covers the contribution of low- and nonvolatile compounds to the **flavour** of foods, is divided into 3 sections (Analysis, Taste, and Precursors and interaction). The Analysis section contains 3 chapters: Pyrolysis/GC/MS analysis of non-volatile **flavor** precursors: Amadori compounds (pp. 13-26, 10 reference); Isolation and identification of polyhydroxyalkylpyrazines from roasted peanuts by **HPLC** and **HPLC-MS** (pp. 27-35, 7 reference); and Stability study on some selected **flavor** chemicals in polypropylene glycol at room temperature (pp. 37-43, 1 reference). 8 chapters are presented in the Taste section: Contribution of a naturally occurring, non-volatile **peptide** to beef **flavor** (pp. 47-57, 48 reference); Sensory meat species identification influenced by fat content (pp. 59-64, 6 reference); Molecular aspects of sweet taste transduction (pp. 65-75, 48 reference); New high-potency sweeteners (pp. 77-93, 22 reference);

Suppression of  
bitterness by sodium: implications for **flavor** enhancement (pp. 95-117, 54 reference); Taste and mouthfeel in low-calorie drinks (pp. 119-123, 9 reference); Solubilization of flavors (pp. 125-135, 41 reference); and

Limonin: a  
non-volatile bitter principle in citrus juice (pp. 137-145, 30 reference). The Precursors and interaction section contains 6 chapters: Maillard lipid interactions in low moisture system (pp. 149-181, 42 reference); A role of lipids in the formation of cooked **flavor** (pp. 183-192, 21 reference); The role of phospholipids in meat **flavor**. An overview (pp. 193-205, 49 reference); Contribution of glycosidically bound volatile compounds to processed food aroma (pp. 207-216, 36 reference); Effect of soy protein on roasted aroma formation in model systems (pp. 217-225, 14 reference); and **Flavor** formation in fried shallot via thermal reactions of nonvolatile **flavor** precursors (pp. 227-237, 17 reference). A 4-pp. subject index is also included.

CC A (Food Sciences)

CT BOOKS; **FLAVOUR**; SENSORY PROPERTIES; FOODS

L9 ANSWER 58 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1996(12):P0096 FSTA

TI Effect of salt-in-moisture on proteolysis in Cheddar-type cheese.

AU Kelly, M.; Fox, P. F.; McSweeney, P. L. H.

CS Correspondence (Reprint) address, P. L. H. McSweeney, Dep. of Food Chem., University Coll., Cork, Republic of Ireland. E-mail pmcs(a)bureau.ucc.ie

SO Milchwissenschaft, (1996), 51 (9) 498-501, 19 ref.  
ISSN: 0026-3788

DT Journal

LA English

SL German

AB Effects of NaCl concentration on proteolysis in Cheddar cheeses were investigated. Cheddar cheese curd was salted at different levels (0-3.3% w/w), giving salt-in-moisture (S/M) values of 0.37-5.41%. Portions were mellowed and filled into moulds. Cheeses were ripened at 7°C and samples were analysed periodically during ripening for up to 24 wk. Proteolysis was analysed by determining N levels (water soluble and phosphotungstic acid (PTA) soluble) and by urea-PAGE and reverse phase **HPLC**. Results show that water soluble N levels decreased and PTA soluble N levels generally increased with increasing NaCl concentration. Urea-PAGE revealed that NaCl had little effect on the type of **peptides** produced, but did influence their concentration. Degradation of  $\beta$ -casein was particularly sensitive to high NaCl concentration. Reverse phase **HPLC** showed that production of most **peptides** was

elevated at low S/M values. Cheese containing 2.70% S/M was considered optimal in terms of **flavour**.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; DAIRY PRODUCTS; FLAVOURINGS; PROTEOLYSIS; SALT; CHEDDAR CHEESE; NACL

L9 ANSWER 59 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1996(09):T0017 FSTA

TI Synthesis and characterization of the sweet protein brazzein.

AU Izawa, H.; Ota, M.; Kohmura, M.; Ariyoshi, Y.

CS Correspondence (Reprint) address, Y. Ariyoshi, Cent. Res. Lab., Ajinomoto Co. Inc., 1-1 Suzuki-cho, Kawasaki-ku, Kawasaki 210, Japan

SO Biopolymers, (1996), 39 (1) 95-101, 29 ref.

DT Journal

LA English

AB Brazzein, a sweet protein (500-2000x sweeter than sucrose) from the plant *Pentadiplandra brazzeana* Baillon, has potential as a low calorie sweetener. Chemical synthesis of brazzein and properties of brazzein enantiomers are described. Brazzein was synthesized using the stepwise fluoren-9-ylmethoxycarbonyl (Fmoc) solid-phase method on an automated **peptide** synthesizer. Results show that reduced brazzein refolded spontaneously in vitro to regain its native sweet conformation. The synthetic **peptide** was characterized by **HPLC**, electrospray ionization MS, **peptide** mapping and amino acid analysis. Properties of the synthesized **peptide** were close to those of natural brazzein. The D-enantiomer, ent-brazzein, was also synthesized; this protein was not sweet and was essentially tasteless, indicating that the receptor protein discriminates between different enantiomers.

CC T (Additives, Spices and Condiments)

CT ADDITIVES; **FLAVOUR**; ISOMERS; SENSORY PROPERTIES; SWEETENERS; BRAFFEIN; ENANTIOMERS; SWEETNESS

L9 ANSWER 60 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1996(06):S0063 FSTA

TI Stability of beefy meaty **peptide** to pasteurization and sterilization temperatures.

AU Wang, K.; Maga, J. A.; Bechtel, P. J.

CS Correspondence (Reprint) address, P. J. Bechtel, Dep. of Food Sci. & Human Nutr., Colorado State Univ., Fort Collins, CO 80523, USA

SO Lebensmittel-Wissenschaft und -Technologie, (1995), 28 (5) 539-542, 11 ref.

ISSN: 0023-6438

DT Journal

LA English

AB Beefy meat **peptide** (BMP) is an octapeptide found in meat (beef) which imparts desirable sensory properties. The stability of BMP to pasteurization and sterilization was studied by heating BMP samples to 71°C for 15 s or 121°C for 20 min. After pasteurization and sterilization, BMP was evaluated using **HPLC** and MS. Results of analyses showed that compared with many **peptides**, BMP was relatively stable to pasteurization and sterilization; there was a small amount (<10%) of degradation of BMP during sterilization. It is suggested that BMP has potential as a **flavour** enhancer in heat-processed foods.

CC S (Meat, Poultry and Game)

CT BEEF; MEAT SPECIFIC; **PEPTIDES**; PHYSICAL PROPERTIES; PROTEINS; THERMOPHYSICAL PROPERTIES; HEAT STABILITY

L9 ANSWER 61 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1996(06):P0129 FSTA

TI [Qualitative instrumental-analytical assessment of proteolytic cheese ripening. I. Assessment of the ripening of Edam cheese.]  
Qualitaetssichernde instrumentell-analytische Erfassung der

proteolytischen Kaesereifung. I. Statuserhebung zur Beurteilung des Reifungsverlaufes bei Edamer-Kaese.

- AU Frister, H.  
CS Fachhochschule Hannover, Heisterbergallee 12, 30453 Hanover, Germany  
SO Deutsche Milchwirtschaft, (1996), 47 (4) 169-173  
ISSN: 0012-0480  
DT Journal  
LA German  
AB Analysis of proteolysis in ripening cheese is considered with reference to primary and secondary proteolysis of casein and to the use of **HPLC**, electrophoresis and a modified OPA (o-phthaldialdehyde) method for analysing proteolysis as a qualitative measure during cheese ripening. Primary proteolysis could be followed by RP-**HPLC** analysis of casein fractions,  $\alpha$ .sub.s.sub.1-casein decreasing by approx. 50% within the 1st 2 wk of ripening. Electrophoretic analysis of casein sediment supported these results but gave lower reproducibility than **HPLC**. Use of RP-**HPLC** analysis of **peptide** fractions to evaluate secondary proteolysis in aqueous cheese extract was also demonstrated, together with use of the modified OPA method to assess **flavour** development during ripening based on photometric determination of amino-N soluble in phosphotungstic acid. [See following abstract for part II.]  
CC P (Milk and Dairy Products)  
CT ANALYTICAL TECHNIQUES; CHEESE VARIETIES; DAIRY PRODUCTS; PROTEOLYSIS; RIPENING; ANALYSIS; EDAM CHEESE
- L9 ANSWER 62 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1996(05):P0252 FSTA  
TI The effect of milk coagulant on the formation of hydrophobic **peptides** in cheese manufactured from cow, ewe or goat milk.  
AU Carrera, E.; Gaya, P.; Medina, M.; Nunez, M.  
CS United States of America, American Dairy Science Association Joint Meeting 1995; United States of America, Northeast ADSA/ASAS Joint Meeting 1995; Cent. de Investigacion y Tecnologia, INIA, Madrid, Spain  
SO Journal of Dairy Science, (1995), 78 (Suppl. 1) 143  
ISSN: 0022-0302  
DT Conference  
LA English  
AB Various coagulants (chymosin, rennets (animal, microbial and vegetable), Neutrase) were compared for use in manufacture of cows', ewes' and goats' milk cheeses according to Manchego cheese technology. Hydrophobic **peptides** formed 2, 8 and 24 h after coagulant addition were measured by **HPLC**. Differences in levels of hydrophobic **peptides** according to coagulant used significantly affected bitter **flavour** formation, which was considerably higher in cheeses made using Neutrase and vegetable rennet (from *Cynara cardunculus*) than in cheeses made using the other coagulants. Minor differences due to milk species were also observed. [From En summ. Further abstracts from this Meeting may be traced via the corporate author (CA) field, under United States of America, American Dairy Science Association [Joint Meeting 1995] and United States of America, Northeast ADSA/ASAS [Joint Meeting 1995]. See also FSTA (1996) 28 4P27.]  
CC P (Milk and Dairy Products)  
CT CHEESE; DAIRY PRODUCTS; ENZYMES; ENZYMES MILK CLOTTING; **PEPTIDES**; PROTEINS
- L9 ANSWER 63 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1996(05):P0093 FSTA  
TI Specificity of an extracellular proteinase from *Brevibacterium linens* ATCC 9174 on bovine  $\alpha$ .sub.s.sub.1-casein.  
AU Rattray, F. P.; Fox, P. F.; Healy, A.  
CS Dep. of Food Chem., University Coll., Cork, Ireland. Tel. 353 21 902816. Fax 353 21 270001. E-mail DYDK6010(a)IRUCCVAX.UCC.IE  
SO Applied and Environmental Microbiology, (1996), 62 (2) 501-506, 36 ref.



ISSN: 0099-2240

DT Journal  
LA English  
AB [Brevibacterium linens is found on the surface of various smear surface-ripened cheeses. Proteinases from this bacterium are involved in **flavour** development of the cheese.] The specificity of an extracellular proteinase from B. linens ATCC 9174 on bovine  $\alpha$ .sub.s.sub.1-casein was studied. Hydrolysis was monitored over time by SDS-PAGE and urea-PAGE. The major pH 4.6-soluble **peptides** were isolated by **HPLC** and identified by N-terminal amino acid sequencing and MS. The time course of **peptide** formation indicated that His8-Gln9, Ser161-Gly162, and either Gln172-Tyr173 or Phe23-Phe24 were the first, second and third bonds cleaved, respectively. Other cleavage sites included Asn19-Leu20, Phe32-Gly33, Tyr104-Lys105, Leu142-Ala143, Phe150-Arg151, Gln152-Phe153, Leu169-Gly170 and Thr171-Gln172. The proteinase had a broad specificity for the amino acid residues at the P.sub.1 and P'.sub.1 positions but showed a preference for hydrophobic residues at the P.sub.2, P.sub.3, P.sub.4, P'.sub.2, P'.sub.3 and P'.sub.4 positions. [The influence of this enzyme on **flavour** development in cheese is discussed.]

CC P (Milk and Dairy Products)  
CT BACTERIA; BREVIBACTERIUM; CASEIN; ENZYMES; MICROORGANISMS; PROTEINASES; PROTEINS; PROTEOLYSIS; HYDROLYSIS

L9 ANSWER 64 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1996(03):A0055 FSTA  
TI Taste of 'Delicious' beefy meaty **peptide**. Revised.  
AU Wassenaar, P. D. van; Oord, A. H. A. van den; Schaaper, W. M. M.  
CS Unilever Res. Lab., Olivier van Noortlaan 120, 3133 AT Vlaardingen, Netherlands. E-mail Dick-van.Wassenaar(a)2488BNS.urlnl.sprint.com  
SO Journal of Agricultural and Food Chemistry, (1995), 43 (11) 2828-2832, 16 ref.  
ISSN: 0021-8561

DT Journal  
LA English  
AB A previously isolated octapeptide known as beefy meaty **peptide** or 'delicious' **peptide**, which can be used as a beef **flavour** enhancer, was synthesized. Using Fmoc-amino acids and HBTU reagent, the **peptide** was synthesized and recovered in high yield. The **peptide** was characterized by biochemical methods and evaluated for its alleged umami taste properties similar to the taste of monosodium glutamate (MSG). The **peptide** was shown to be homogeneous by **HPLC**, amino acid composition analysis, and amino acid sequence analysis. Electrospray MS confirmed the sequence analysis. Stability of the **peptide** in solution was also evaluated. Taste evaluation by a trained **flavour** panel showed that the synthesized octapeptide and some **peptide** fragments did not have any umami or other taste. Suggestions are given to explain the observed difference between these results and those previously reported.

CC A (Food Sciences)  
CT **FLAVOUR**; **PEPTIDES**; PROTEINS; SENSORY PROPERTIES

L9 ANSWER 65 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1996(01):P0072 FSTA  
TI Proteolysis and its impact on **flavour** development in reduced-fat semi-hard cheese made with mesophilic undefined DL-starter.  
AU Ardoe, Y.  
CS Lund Univ., Lund, Sweden  
SO Dissertation Abstracts International, C, (1994), 55 (4) 1093 67pp.  
ISSN: 0307-6075

DT Dissertation  
LA English  
AB Proteolysis and peptidolysis occurring during maturation of cheeses were studied in relation to **flavour** using crude fractionation of

different sized N compounds, electrophoresis of casein components, reversed-phase **HPLC** of water-soluble **peptides**, and ion-exchange chromatography of amino acids. Bacterial growth was monitored during the first 3 wk ripening. Effects on these variables of fat contents of cheese, and of addition of heat-treated *Lactobacillus helveticus* to low-fat cheese, were also examined. Various adjustments are suggested to improve **flavour** of reduced-fat cheeses, i.e. that: early breakdown of casein into relatively large **peptides** should be accelerated; general proteolytic activity on casein and large **peptides** should be reduced; and amino acid production should be accelerated. It is concluded that special starters for reduced-fat cheeses require high and broad aminopeptidase activity, sensitivity to lower

temperature

during cheese production, and the ability to leak peptidases to the cheese matrix at higher moisture contents than traditional mesophilic undefined starters.

CC P (Milk and Dairy Products)

CT CHEESE; DAIRY PRODUCTS; PROTEOLYSIS; RIPENING

L9 ANSWER 66 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1995(11):B0099 FSTA

TI Isolation of the active-site tryptic **peptide** of sulphhydryl oxidase by monomeric avidin affinity chromatography.

AU Janolino, V. G.; Fontecha, J.; Swaisgood, H. E.

CS IFT Annual Meeting 1995; Southeast Dairy Foods Res. Cent., Dep. of Food Sci., N. Carolina State Univ., Raleigh, NC 27695-7624, USA

SO (1995), p. 198

DT Conference

LA English

AB A 50-ml column of immobilized avidin was used for isolation of the active-site tryptic **peptide** of sulphhydryl oxidase (SHO), which can remove the cooked **flavour** from UHT milk. Biotinylated SHO was applied to columns of monomeric avidin immobilized on carbodiimide-activated succinamidopropyl controlled-pore glass beads, to form an avidin-biotin complex, bound enzyme being eluted by displacement with excess free biotin. Eluted biotinylated SHO was digested with immobilized trypsin at 37°C/pH 8 for 40 h, and resulting **peptide** fragments were applied to the avidin column. Biotinylated **peptides** bound to the avidin matrix were eluted with free biotin and analysed by reversed-phase **HPLC**, 2 major peaks being observed. [Further abstracts from this Meeting can be traced via the FSTA author index, under IFT Annual Meeting 1995. See FSTA (1995) 27 10A6. From En summ.]

CC B (Biotechnology)

CT ANALYTICAL TECHNIQUES; CHROMATOGRAPHY; ENZYMES; OXIDASES; **PEPTIDES**; PROCESSING; PROTEINS; SEPARATION; AFFINITY CHROMATOGRAPHY

L9 ANSWER 67 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1995(03):P0086 FSTA

TI Partial characterization of **peptides** from Emmentaler cheese.

AU Bican, P.; Spahni, A.; Schaller, J.

CS Fed. Dairy Res. Inst., Biochem. Sect., 3097 Liebefeld-Berne, Switzerland

SO Food Biotechnology, (1994), 8 (2/3) 229-241, 31 ref.

ISSN: 0890-5436

DT Journal

LA English

AB A novel isolation procedure for the identification of casein breakdown products in Swiss-type (Emmental) cheese is described. Cheese extracts are cleaned-up and fractionated on Waters Sep-Pak C.sub.1.sub.8 and ion-exchange (CM- and QMA-Plus) cartridges. The advantages of this preparation technique are discussed. **Peptides** of different physicochemical natures were analysed by reversed-phase-**HPLC**. Sequence assays of characteristic segments of the **peptide** spectrum were carried out by **HPLC** analysis of the

phenylthiocarbamyl amino acid derivatives and by automated Edman-degradation. This experimental approach holds promise for characterization of the cheese ripening process. Relationships between casein **peptides** and **flavour** development are proposed.

The results obtained suggest that changes in casein **peptides** do not parallel the development of cheese **flavour**. Sequences of 6 predominant basic **peptides** are presented. This is the first report on the sequence of protein degradation products in Swiss cheese.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; DAIRY PRODUCTS; **PEPTIDES**; PROTEINS; EMMENTAL CHEESE

L9 ANSWER 68 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1995(02):P0090 FSTA

TI Isolation and comparative characterization of components that contribute to the **flavour** of different types of cheese.

AU Engels, W. J. M.; Visser, S.

CS NIZO, PO Box 20, 6710 BA Ede, Netherlands

SO Netherlands Milk and Dairy Journal, (1994), 48 (3) 127-140, 37 ref.  
ISSN: 0028-209X

DT Journal

LA English

AB Water-soluble fractions (WSF) of various types of cheese were compared to characterize components that may contribute to cheese **flavour**. WSF of 7 types (Cheddar, Edam, Gouda, Gruyere, Maasdam, Parmesan and Proosdij cheese) were prepared by homogenizing grated cheese with water in a stomacher and then removing the remaining solids by centrifugation. WSF were fractionated by serial ultrafiltration (with membranes of different mol. weight cut-off), followed by gel filtration and Sep-Pak C.sub.1.sub.8 chromatography. Resulting fractions were analysed by reversed-phase **HPLC**, GC, amino acid analysis and sensory evaluation. Low-mol. weight (<500 Da) compounds were responsible for **flavour** in WSF. It is suggested that these compounds are small **peptides**, amino acids, free fatty acids or breakdown products of such compounds. [From En summ.]

CC P (Milk and Dairy Products)

CT CHEESE; DAIRY PRODUCTS; **FLAVOUR COMPOUNDS**

L9 ANSWER 69 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1995(01):P0005 FSTA

TI Hydrolysis of casein: a comparative study of two proteases and their **peptide** maps.

AU Gallagher, J.; Kanekanian, A. D.; Evans, E. P.

CS Correspondence (Reprint) address, A. D. Kanekanian, Sch. of Consumer Studies, Tourism & Hospitality Management, Univ. of Wales, Cardiff CF1 3AS, UK. Fax +44 222 874446

SO International Journal of Food Science & Technology, (1994), 29 (3) 279-285, 13 ref.

DT Journal

LA English

AB SDS-PAGE and reversed phase-**HPLC** were used to study the actions of 2 enzymes, a pineapple stem bromelain and Bacillus subtilis proteinase, on bovine caseins. Possible future applications of the enzymes in the production of bitter **peptides** were determined. The 2 proteinases produced hydrolysates of very different **peptide** composition. The Bacillus proteinase produced a greater variety of hydrophobic, low mol. weight (<10 kDa) **peptides**, due to a more extensive proteinase activity. Bromelain, however, produced a hydrophobic hydrolysate containing a greater number of high mol. weight **peptides** (>10 kDa), which are not normally associated with **flavour** fractions. Results show that the hydrolysate produced by the Bacillus proteinase is a greater potential source of bitter **peptides** than the hydrolysate produced by bromelain. [From En summ.]

CC P (Milk and Dairy Products)

CT BACILLUS; BACTERIA; CASEIN; ENZYMES; PROTEINASES; PROTEINS; HYDROLYSIS

L9 ANSWER 70 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 1994(11):P0097 FSTA  
 TI Phosphopeptides from Comte cheese: nature and origin.  
 AU Roudot-Algaron, F.; Bars, D. le; Kerhoas, L.; Einhorn, J.; Gripon, J. C.  
 CS Sta. de Recherches Laitieres, INRA, Domaine de Vilvert, 78352 Jouy en  
 Josas, France  
 SO Journal of Food Science, (1994), 59 (3) 544-547, 560, 32 ref.  
 ISSN: 0022-1147  
 DT Journal  
 LA English  
 AB Purification and identification of phosphopeptides from Comte cheese were investigated and the enzymic mechanisms involved in generation of observed **peptides** were considered. 13 Low-mol. weight phosphopeptides were isolated from the water-soluble fraction of Comte cheese. The sample was fractionated and purified by gel permeation chromatography and reverse-phase **HPLC**. **Peptide** sequences were identified by Edman degradation and primary molecular structure was confirmed by MS. The different **peptides** purified correspond to fragments of the sequence Val13-Lys 28 of  $\beta$ -casein and of the sequence Glu 5-Lys 21 of  $\alpha$ .sub.s.sub.2-casein. These fragments probably originated from an initial proteolysis of the 2 caseins by plasmin, followed by further endopeptidase, aminopeptidase and, possibly, carboxypeptidase digestions. Partial dephosphorylation of some  $\beta$ -casein fragments was observed. It is suggested that these **peptides** may influence the **flavour** profile of Comte cheese. [From En summ.]  
 CC P (Milk and Dairy Products)  
 CT CHEESE VARIETIES; DAIRY PRODUCTS; **PEPTIDES**; PROTEINS; COMTE CHEESE; PHOSPHOPEPTIDES

L9 ANSWER 71 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 1994(11):P0094 FSTA  
 TI Reverse-phase **HPLC** analysis of cheese samples aged by a fast-ripening process.  
 AU Furtula, V.; Nakai, S.; Amantea, G. F.; Laleye, L.  
 CS Dep. of Food Sci., Univ. of British Columbia, Vancouver, BC V6T 1Z4 Canada  
 SO Journal of Food Science, (1994), 59 (3) 528-532, 567, 14 ref.  
 ISSN: 0022-1147  
 DT Journal  
 LA English  
 AB If cheese ripening is to be successfully accelerated, **flavour** profiles for water soluble **peptides**, as well as GC profiles for volatiles, should be similar to those of traditional cheese. Based on this principle, patterns of Cheddar cheese ripening (for 3, 6, 9, and 12 months) on the principle component similarity (PCS) plot of **HPLC** data were compared when ripening was accelerated by adding enzymes from lactic acid bacteria. Cheese ripening accelerated in this way promoted proteolysis and produced an acceptable novel cheese as determined using sensory tests. However, **HPLC** profiles for water-soluble compounds were considerably different from those for control Cheddar cheese without the added enzyme extracts, probably indicating a different mechanism of proteolysis. Samples did not follow the usual ageing pathway on a similarity scattergram when **HPLC** data were processed by PCS analysis. Such analysis was useful for evaluating effects of accelerated cheese ripening. [From En summ. See also following abstract]  
 CC P (Milk and Dairy Products)  
 CT BACTERIA; CHEESE VARIETIES; DAIRY PRODUCTS; ENZYMES; MICROORGANISMS; RIPENING; CHEDDAR CHEESE; LACTIC ACID BACTERIA

L9 ANSWER 72 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
 AN 1994(07):S0047 FSTA  
 TI Effects of high pressure treatment on the **flavour**-related components in meat.  
 AU Suzuki, A.; Homma, N.; Fukuda, A.; Hirao, K.; Uryu, T.

CS Dep. of Applied Biochem., Fac. of Agric., Univ. of Niigata, Niigata  
950-21, Japan

SO Meat Science, (1994), 37 (3) 369-379, 16 ref.  
ISSN: 0309-1740

DT Journal

LA English

AB Effects of high pressure treatment on water-soluble components of beef responsible for beef **flavour** are described. Amounts of **peptides** and amino acids estimated as phenol reagent positive materials (PRPM) increased with increasing pressure applied to the muscle up to 300 MPa, but differences between treatments were not statistically significant. When muscles were stored at 2°C for 7 days after pressurization, increases in amount of PRPM were observed in untreated and pressurized muscles. Contents of serine, glutamic acid, glutamine, glycine and alanine gradually increased in extracts from pressurized muscle as pressure increased up to 200 MPa, and some, especially glutamine and alanine, tended to decrease in muscle pressurized at 300 MPa. When muscles were stored for 7 days after pressurization, apparent increases in aspartic acid, serine, proline, alanine and lysine were observed in extracts from untreated and pressurized muscles. Significant differences were not observed in the contents of each amino acid between each treatment. Content of inosinic acid, considered to contribute to the 'umami' taste of the meat, was not reduced by pressurization. **HPLC** of soluble **peptides** revealed no significant changes in any fraction from pressurized muscles up to 200 MPa and a significant decrease of **peptide** fraction (approx. mol. weight 500) from muscle pressurized at 300 and 400 MPa. Significant increases in the **peptide** fraction of mol. weight 300 and the amino acid fraction, and a decrease of the **peptide** fraction of mol. weight 3000 were observed in the extracts from untreated and pressurized muscles. It is suggested that high-pressure treatment of post mortem muscle causes almost the same changes in the components responsible for the **flavour** of meat as those observed in conditioned muscle. [From En summ.]

CC S (Meat, Poultry and Game)

CT BEEF; **FLAVOUR COMPOUNDS**; MEAT SPECIFIC; PRESSURE

L9 ANSWER 73 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1994(07):J0236 FSTA

TI **Peptide** mapping of peanut proteins: identification of **peptides** as potential indicators of peanut maturity.

AU Si-Yin Chung; Ullah, A. H. J.; Sanders, T. H.

CS S. Reg. Res. Cent., ARS, USDA, PO Box 19687, New Orleans, LA 70179, USA

SO Journal of Agricultural and Food Chemistry, (1994), 42 (3) 623-628, 36 ref.  
ISSN: 0021-8561

DT Journal

LA English

AB Proteins are major sources of peanut **flavour** precursors such as **peptides** and amino acids. Changes in protein structure could possibly lead to changes in peanut **flavour** quality. As peanut maturity can affect peanut **flavour** quality, it was postulated that proteins in mature and immature peanuts may be structurally different. **Peptide** mapping of mature and immature peanut proteins was therefore carried out. **Peptide** maps were produced by digesting peanut proteins with an arginyl endopeptidase, followed by treatment of resultant protein digests with trichloroacetic acid (TCA) or an affinity column of immobilized anhydrotrypsin (IMAT). TCA-soluble **peptide** fractions were then subjected to analyses by C.sub.1.sub.8 reversed-phase **HPLC**; fractions containing carboxyl- or C-terminal and non-C-terminal **peptides**, from the IMAT column were analysed by capillary zone electrophoresis (CZE). For resolution purposes, fractions collected from the **HPLC** C.sub.1.sub.8 column were further analysed by CZE. Results showed that **peptide** maps from immature peanut proteins contained different **peptides** from

mature peanut proteins. **Peptides** such as **peptide I** (a C-terminal **peptide**) from immature peanut proteins and **peptide M** (a TCA-soluble **peptide**) from mature peanut proteins were identified. Differences in **peptide** patterns indicate that proteins from mature and immature peanuts were structurally different. [From En summ.]

CC J (Fruits, Vegetables and Nuts)

CT FRUITS; PEANUTS; PROTEINS; PROTEINS VEGETABLE; RIPENING; SEEDS

L9 ANSWER 74 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1994(07):J0212 FSTA

TI Composition of sulfur-containing components in onion and their **flavor** characters.

AU Ueda, Y.; Tsubuku, T.; Miyajima, R.

CS Food Res. & Dev. Lab., Ajinomoto Co. Inc., 1-1 Suzuki-cho, Kawasaki-ku, Kawasaki 210, Japan

SO Bioscience, Biotechnology, and Biochemistry, (1994), 58 (1) 108-110, 12 ref.

DT Journal

LA English

AB Sulphur-containing components in an ethanol extract and boiled water extract of onion (*Allium cepa* L.) were analysed by **HPLC**. Trans-(+)-S-propenyl-L-cysteine sulphoxide (PeCSO) and its  $\gamma$ -glutamyl **peptide** ( $\gamma$ -Glu-PeCSO) were the major constituents in the ethanol extract; cycloalliin was the most abundant compound in the boiled water extract. Cycloalliin in the boiled water extract was mostly derived from PeCSO as a result of heating. PeCSO and  $\gamma$ -Glu-PeCSO showed a characteristic kokumi **flavour** (described in terms of continuity, thickness and mouthfulness) by a sensory test in an umami solution containing 0.05% (w/v) each of monosodium glutamate and disodium inosinate.

CC J (Fruits, Vegetables and Nuts)

CT ONIONS; ORGANIC SULPHUR COMPOUNDS; VEGETABLES SPECIFIC

L9 ANSWER 75 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1994(02):P0113 FSTA

TI **Flavor** constituents of aqueous fraction extracted from Comte cheese by liquid carbon dioxide.

AU Roudot-Algaron, F.; Bars, D. le; Einhorn, J.; Adda, J.; Gripon, J. C.

CS Sta. de Recherches Laitieres, INRA, Romaine de Vilvert, 78352 Jouy en Josas, France

SO Journal of Food Science, (1993), 58 (5) 1005-1009, 27 ref.

ISSN: 0022-1147

DT Journal

LA English

AB Isolation, purification and identification of some low-mol. weight compounds from a water-soluble extract of Comte cheese were achieved. Liquid CO.sub.2 extraction, fractionation by gel permeation and reverse-phase **HPLC** and MS were used. Major constituents were N-acyl amino acids (N-acetyl methionine, N-propionyl methionine, N-propionyl leucine, N-propionyl phenylalanine), diketopiperazines (cyclo(Pro-Pro), cyclo(Pro-Val), cyclo(Pro-Phe), cyclo(Pro-Leu), cyclo(Pro-Ala)) and non-**peptide** compounds (theobromine, 4-methyl-t-thiazoleethanol, uracil, (5-6)dihydro-uracil, thymine). These compounds were synthesized and tasted. Most were bitter. N-propionyl methionine had a cheese **flavour** but was not detected when added to a simulated cheese at 180 mg/l.

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; DAIRY PRODUCTS; **FLAVOUR** COMPOUNDS; COMTE CHEESE

L9 ANSWER 76 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1994(02):P0100 FSTA

TI The contribution of lactococcal starter proteinases to proteolysis in

Cheddar cheese.

AU Law, J.; Fitzgerald, G. F.; Uniacke-Lowe, T.; Daly, C.; Fox, P. F.  
CS Dep. of Food Microbiol., Nat Food Biotech. Cent., Univ. Coll. Cork,  
Republic of Ireland

SO Journal of Dairy Science, (1993), 76 (9) 2455-2467, 24 ref.  
ISSN: 0022-0302

DT Journal

LA English

AB The contribution of the lactococcal proteinase to proteolysis and **flavour** development in Cheddar cheese was investigated using the starter strains *Lactococcus lactis* subsp. *lactis* UC317, its proteinase-negative derivative FH041, and variants of UC317 modified in proteinase production, location and specificity. *L. lactis* subsp. *lactis* FH041 was transformed by electroporation with plasmids pCI3601, pCI3602 or pNZ521. Plasmids pCI3601 and pCI3602 harbour the cloned proteinase genes of *L. lactis* subsp. *lactis* UC317 on a high copy number vector and, as such, encode an increased concentration of cell wall-associated and secreted enzymes, respectively. Plasmid pNZ521 contains the cloned proteinase genes from *L. lactis* subsp. *cremoris* SK11. Assessment of proteolysis and **flavour** development in Cheddar cheese made with these strains revealed that starter proteinases are required for the accumulation of small **peptides** and free amino acids in Cheddar cheese. Proteolysis was not enhanced by an approx. 3-fold increase in concentration of the lactococcal proteinase. The strain in which the proteinase remained attached to the cell wall appeared to contribute more to proteolysis than the strain that secreted the enzyme. Water-soluble **peptides** unique to *L. lactis* subsp. *cremoris* SK11 and *L. lactis* subsp. *lactis* UC317 were detected by PAGE and **HPLC**, respectively. Sensory evaluation showed that the flavours of all cheeses made with proteinase-positive starters were similar, but cheeses made with proteinase-negative starters lacked **flavour**.

CC P (Milk and Dairy Products)

CT BACTERIA; CHEESE VARIETIES; DAIRY PRODUCTS; ENZYMES; PROTEINASES;  
PROTEOLYSIS; STARTERS; CHEDDAR CHEESE

L9 ANSWER 77 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1993(10):P0001 FSTA

TI Bitter taste of enzymic hydrolysates of casein. I. Isolation, structural and sensorial analysis of **peptides** from tryptic hydrolysates of  $\beta$ -casein.

AU Bumberger, E.; Belitz, H. D.

CS Deutsche Forschungsanstalt fuer Lebensmittelchem., Stiftung des  
Oeffentlichen Rechts, Munich, Germany

SO Zeitschrift fuer Lebensmittel-Untersuchung und -Forschung, (1993), 197 (1)  
14-19, 73 ref.  
ISSN: 0044-3026

DT Journal

LA English

SL German

AB  $\beta$ -Casein A.sup.2 was isolated from milk of a homozygous cow and hydrolysed with trypsin. The hydrolysate was separated by RP-**HPLC** into 18 **peptides**, all but 1 of which could be attributed to the sequence of  $\beta$ -casein on the basis of the amino acid composition. Some **peptides** overlapped. In total, they represented about 97% of the protein sequence. Only 3 **peptides** had a bitter taste, namely I.sup.4.sup.9-N.sup.6.sup.8 (recognition threshold 1.0 mg/ml, 0.45 mmol/l), I.sup.4.sup.9-K.sup.9.sup.7 (1.5 mg/ml, 0.28 mmol/l) and G.sup.2.sup.0.sup.3-V.sup.2.sup.0.sup.9 (0.175 mg/ml, 0.23 mmol/l). Contribution of the 3 **peptides** to overall bitterness of the  $\beta$ -casein hydrolysate (2.67 mg/ml) was about 11, 21 and 60%, respectively. **Peptide** I.sup.4.sup.9-K.sup.9.sup.7 was present in the hydrolysate together with its fragments I.sup.4.sup.9-N.sup.6.sup.8 and S.sup.6.sup.9-K.sup.9.sup.7. Remarkably, the smaller and more hydrophobic fragment I.sup.4.sup.9-N.sup.6.sup.8 was less bitter than

I.sup.4.sup.9-K.sup.9.sup.7 on a molar basis, whereas the larger and more hydrophilic fragment S.sup.6.sup.9-K.sup.9.sup.7 had a neutral taste. These results show that in the case of larger **peptides** neither hydrophobicity nor size are responsible alone for bitter potency, but that conformational parameters must be of great importance. Furthermore, it can be concluded that only part of the structure is responsible for the contact with the receptor. Bitterness of G.sup.2.sup.0.sup.3-V.sup.2.sup.0.sup.9 is discussed in connection with related synthetic **peptides** in the literature.

CC P (Milk and Dairy Products)  
CT CASEIN; **FLAVOUR**; **PEPTIDES**; PROTEINS; SENSORY PROPERTIES; Nb -CASEIN; BITTERNESS

L9 ANSWER 78 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1993(07):P0132 FSTA

TI Protein degradation in Cheddar-type cheese containing heat-denatured whey protein.

AU Banks, J. M.; Law, A. J. R.; Leaver, J.

CS International Dairy Federation Cheese Ripening Seminar; Hannah Res. Inst., Ayr KA6 5HL, UK

SO International Dairy Journal, (1993), 3 (4-6) 545-546  
ISSN: 0958-6946

DT Conference

LA English

AB Cheddar-type cheese was prepared from pasteurized milk (control) or milk heated to 110°C for 60 s (test cheese containing denatured whey protein). Protein degradation and sensory properties of cheeses were compared. Protein recovery from test and control cheeses was 87.4 and 77.6%, respectively. At 8 months, control samples had an excellent mature **flavour** while intense off-flavours were present in test samples. Reversed phase HPLC showed that total **peptide** levels in test cheeses were significantly higher than in controls. Fast protein liquid chromatography (FPLC) in Mono Q and Mono S resins demonstrated that a significant proportion of  $\beta$ -,  $\alpha$ .sub.s.sub.1- and  $\alpha$ .sub.s.sub.2-caseins remained in control cheeses after 8 months; significantly lower levels of these fractions remained in test cheese. Amino acid content of the test cheese was only one third that of control cheese. Results suggest that **flavour** defects in cheese produced from milk containing denatured whey protein are due to an imbalance in the ratio of protease to peptidase activity in cheese. It is concluded that modifications in processing conditions may overcome these defects. This is one of 28 abstracts sourced from the seminar Cheese Ripening held in Lund, Sweden on 7-9 april, 1992; the other abstracts may be traced via the author index under International Dairy Federation [Cheese Ripening Seminar].

CC P (Milk and Dairy Products)  
CT CHEESE; DAIRY PRODUCTS; DENATURATION; **FLAVOUR**; PROTEINS; PROTEINS MILK; SENSORY PROPERTIES; WHEY; WHEY PROTEINS

L9 ANSWER 79 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1993(07):P0114 FSTA

TI Isolation and characterization of non-volatile flavours from cheese: **peptide** profile of **flavour** fractions from Cheddar cheese, determined by reverse-phase high-performance liquid chromatography.

AU Cliffe, A. J.; Marks, J. D.; Mulholland, F.

CS International Dairy Federation Cheese Ripening Seminar; Correspondence (Reprint) address, F. Mulholland, Dep. of Biotech. & Enzymology, AFRC Inst. of Food Res., Reading Lab., Earley Gate, Whiteknights Rd., Reading RG6 2EF, UK

SO International Dairy Journal, (1993), 3 (4-6) 379-387, 16 ref.  
ISSN: 0958-6946

DT Conference

LA English



AB A well matured Cheddar cheese was fractionated to investigate the different flavours present in the water-soluble extract. After gel filtration, fractions were found to have a range of flavours from bitterness in the earlier-running, higher mol. weight components to more desirable savoury flavours in later-running, lower mol. weight components. **Peptide** profiling of these fractions by reverse-phase **HPLC** showed that bitter fractions were composed largely of material that was late running on reverse-phase columns and thought to contain hydrophobic **peptides**. Lower mol. weight fractions with a savoury **flavour** had a much greater content of early-running material on reverse-phase columns, which is likely to contain more hydrophilic **peptides** and amino acids. This is one of 28 abstracts sourced from the seminar Cheese Ripening held in Lund, Sweden on 7-9 April, 1992; the other abstracts may be traced via the author index under International Dairy Federation [Cheese Ripening Seminar].

CC P (Milk and Dairy Products)

CT CHEESE VARIETIES; DAIRY PRODUCTS; EXTRACTS; **FLAVOUR**;  
FLAVOURINGS; SENSORY PROPERTIES; CHEDDAR CHEESE

L9 ANSWER 80 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1992(12):S0060 FSTA

TI [The **flavour** of bouillon. I. Quantitative analysis of non-volatiles.]

Zum Geschmack von Fleischbruehe. I. Quantitative Analyse der nichtfluechtigen Inhaltsstoffe.

AU Warendorf, T.; Belitz, H. D.

CS Correspondence (Reprint) address, H. D. Belitz, Deutsche Forschungsanstalt fuer Lebensmittelchem. Tech. Univ. Muenchen, W-8046 Garching, Federal Republic of Germany

SO Zeitschrift fuer Lebensmittel-Untersuchung und -Forschung, (1992), 195 (3) 209-214, 41 ref.

ISSN: 0044-3026

DT Journal

LA German

SL English

AB Bouillon was prepared according to a recipe for consomme double from beef and lyophilized. The lyophilisate was separated into several fractions by gel permeation chromatography and reversed-phase-**HPLC**. The fractions and/or the lyophilisate were quantitatively analysed for proteins, **peptides**, free amino acids, nucleotides, nucleosides, organic acids and minerals. The data for most of the components were in the range known for meat extracts from the literature. Chloride, phosphate and 5'-inosine monophosphate (5'-IMP) were significantly lower. Pyroglutamic acid, probably formed from free glutamine, was present in relatively large amounts (1.9% of lyophilisate dry matter), in comparison to free glutamic acid (Glu, 0.24% of lyophilisate dry matter). The concentration

of free Glu (43 mg/l) and 5'-IMP (126 mg/l) in bouillon were more than one magnitude higher and lower, resp., than the amounts usually added to commercial products (1.0-1.6 g Glu/l and 0.02-0.03 g 5'-IMP/l). The data were used as a basis for investigations of the sensory relevance of the non-volatiles and for the imitation of a bouillon.

CC S (Meat, Poultry and Game)

CT BEEF; MEAT; SOUPS; BOUILLON; PREPARED FOODS

L9 ANSWER 81 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1992(11):P0096 FSTA

TI Monitoring Cheddar cheese ripening by chemical indices of proteolysis. II. **Peptide** mapping of casein fragments by reverse-phase high-performance liquid chromatography.

AU Kaiser, K. P.; Belitz, H. D.; Fritsch, R. J.

CS Correspondence (Reprint) address, H. D. Belitz, Dep. of Food Chem., Tech. Univ., Munich, Federal Republic of Germany

SO Zeitschrift fuer Lebensmittel-Untersuchung und -Forschung, (1992), 195 (1)

8-14, 23 ref.  
ISSN: 0044-3026

DT Journal  
LA English  
SL German

AB The proteolysis of casein during cheese ripening was studied by reverse-phase (RP)-**HPLC peptide** mapping. Cheddar cheese from 2 different production plants was analysed during a 6-month ripening period at 4 and 10°C. The elution profile obtained from cheese extracts soluble at pH 4.6 contained >120 peaks. These were grouped into 4 ranges of molecular mass (I <3000 Da; II >30 000 Da; III >10 000 Da; IV >3000 Da) by RP-**HPLC** of cheese extracts fractionated by ultrafiltration at different molecular mass cut-offs. The **peptide** patterns, especially in the molecular mass range below 3000 Da, were clearly dependent on ripening time and temperature, manufacturing history, and composition of the cheese. Several short chain **peptides** with <10 amino acid residues were isolated, sequenced for identification and assigned to the corresponding amino acid sequences of  $\alpha$ .sub.s.sub.1-casein and  $\beta$ -casein. The levels and ratios of these defined marker **peptides** seem to be well suited for in-depth characterization of proteolysis and ripening of Cheddar cheese. This information is fundamental for studies on cheese origin, **flavour**, taste and texture. [See FSTA (1992) 24 8P62 for part I.]

CC P (Milk and Dairy Products)

CT CASEIN; CHEESE VARIETIES; DAIRY PRODUCTS; **PEPTIDES**; PROTEINS; RIPENING; CHEDDAR CHEESE; CHEESES SPECIFIC

L9 ANSWER 82 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1992(11):P0093 FSTA

TI Characterization of the proteolytic products in cheese.

AU Tieleman, A. E.

CS Univ. of Minnesota, Minneapolis, MN 55455, USA

SO Dissertation Abstracts International, B, (1992), 52 (9) 4539: Order no. DA9207809, 211pp.  
ISSN: 0419-4217

DT Dissertation

LA English

AB Casein in cheese breaks down during ripening into **peptides** that can affect the texture and taste of cheese. **Peptides** that form during cheese ripening can have a bitter **flavour**. In this study **HPLC** and SDS-PAGE were utilized to determine the individual **peptides** and protein changes in cheese. **HPLC** chromatograms of proteolytic products from Cheddar cheese revealed that the extracts had different **peptides** present dependent on the extraction procedure. Extraction utilizing water was used for the rest of the research. The extract was divided into fractions based on mol. weight and further characterized for bitter components. The fraction >1000 but <10 000 mol. weight was bitter. The 1000 mol. weight fraction tasted brothy and

upon

a 4-fold concentration remained brothy but not bitter. Cheddar, Gouda, Mozzarella and Swiss cheese were compared during 5 months ripening using **HPLC** and SDS-PAGE. Changes in Mozzarella cheese occurred in the later eluting regions of the chromatograms where proteins and polypeptides elute. Gouda, Cheddar and Swiss cheese had changes in the early regions of the chromatogram where the **peptides** of <10 000 mol. weight were eluted. The proteolytic patterns of the cheese varieties became more distinguishing as the cheese aged. **HPLC** was also used to monitor the **peptide** profile during 9 months ripening of 14 different Cheddar cheeses. Cheeses showed significant differences in salt content, bitter **flavour**, bitter aftertaste and individual peak areas from the **HPLC** separation. A model was developed that used bitter sensory scores as a response and the individual peak areas as predictors. Most of the peaks in the model elute in the same region as the bitter fraction.

CC P (Milk and Dairy Products)  
CT CHEESE; DAIRY PRODUCTS; PROTEINS; PROTEINS MILK; RIPENING

L9 ANSWER 83 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1991(11):T0054 FSTA  
TI **HPLC** analysis of allicin and other thiosulfinates in garlic clove homogenates.  
AU Lawson, L. D.; Wood, S. G.; Hughes, B. G.  
CS Murdock Healthcare, Springville, UT 84663, USA  
SO Planta Medica, (1991), 57 (3) 263-270, 25 ref.  
ISSN: 0032-0943  
DT Journal  
LA English  
AB Reversed-phase **HPLC** was used to separate and quantitate all the detectable alkyl and alkenyl thiosulphinates, including configurational isomers, of garlic homogenates. Pure thiosulphinates were synthesized or isolated and identified by <sup>1</sup>H-NMR, and their extinction coefficient determined. Some configurational isomers required separation by silica-**HPLC**. 5 previously unreported thiosulphinates were found, 4 of which contain the trans-1-propenyl group and increase several-fold to over half the content of allicin upon storage of garlic bulbs at 4°C with a concomitant decrease in a γ-glutamyl **peptide**. The variation in thiosulphinate yield between different countries, stores, bulbs, cloves, and storage times was investigated. A method for standardizing the quantitation of allicin yield from garlic is proposed and compared to other methods of allicin analysis.

CC T (Additives, Spices and Condiments)  
CT ANALYTICAL TECHNIQUES; CONDIMENTS; **FLAVOUR COMPOUNDS**; FLAVOURINGS; GARLIC; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; ORGANIC SULPHUR COMPOUNDS; SPICES; VOLATILE COMPOUNDS; ALLICIN

L9 ANSWER 84 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1991(11):P0078 FSTA  
TI Isolation of low-molecular-weight taste **peptides** from Vacherin Mont d'Or cheese.  
AU Mojarro-Guerra, S. H.; Amado, R.; Arrigoni, E.; Solms, J.  
CS Dep. of Food Sci., Swiss Federal Inst. of Tech., CH-8092 Zurich, Switzerland  
SO Journal of Food Science, (1991), 56 (4) 943-947, 41 ref.  
ISSN: 0022-1147  
DT Journal  
LA English  
AB [Low-mol. weight protein degradation products were studied in Vacherin Mont d'Or cheese, a Swiss cheese speciality.] Vacherin cheese samples were extracted with water and extracts fractionated by ultrafiltration excluding compounds with a mol. weight <1000. Extract aliquots were fractionated by ligand exchange chromatography on a Sephadex derivative containing N-(2-pyridylmethyl)glycine-groups in Cu.<sup>sup.2.sup.+</sup> form, permitting a specific group separation of **peptides**. 5 **peptide** sub-groups were then chromatographed on Aminex A6 and Durrum DC 4 resin. 9 fractions from these separations were characterized by manual gas-phase isothiocyanate degradation and **HPLC** of the amino acid derivatives. 7 **peptides** could be identified: H-Leu-Pro-OH, H-Val-Pro-OH, H-Phe-Pro-OH, H-Lys-Pro-OH, H-Gly-Pro-Val-Arg-OH, H-Tyr-Pro-OH, and H-Arg-Pro-OH. A partial elucidation of the structure was possible for **peptides** containing Asp/Pro/Val/Leu, Glu/Leu, and Ala/Pro.

CC P (Milk and Dairy Products)  
CT CHEESE; DAIRY PRODUCTS; **FLAVOUR**; **PEPTIDES**; PHYSICAL PROPERTIES; PROTEINS; SENSORY PROPERTIES; CHEESES SPECIFIC; MOL. WT.

L9 ANSWER 85 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1991(05):R0009 FSTA  
TI [Studies on **flavour** components of Katsuobushi. II. Non-volatile

**flavour** components in dorsal, abdominal and red meat parts of dried skipjack (Katsuobushi).]

AU Hosokawa, M.; Sakakibara, H.; Yajima, I.; Hayashi, K.  
CS Kawasaki Res. Cent., T. Hasegawa Co. Ltd., 335 Kariyado, Nakahara-ku, Kawasaki 211, Japan  
SO Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi], (1990), 37 (11) 856-861, 17 ref.  
ISSN: 0029-0394  
DT Journal  
LA Japanese  
SL English  
AB The quantitative differences in non-volatile **flavour** components such as free amino acids and their related compounds, nucleotides, organic acids and **peptides** among dorsal, abdominal and red meat parts of Katsuobushi (dried skipjack) were analysed by **HPLC**. Amounts of major free amino acids and their related compounds such as histidine, carnosine and anserine differed greatly among the parts, whereas those of other minor amino acids were similar for all parts. Amounts of the major 3 components (histidine, carnosine and anserine) in the abdominal and red meat parts were about .sup.4/.sub.5 and .sup.1/.sub.2 of those in the dorsal part, resp. Contents of the major nucleotides (IMP and AMP) and organic acids (lactic and acetic acids) in the red meat part were smaller than those in the dorsal and abdominal parts. Chromatograms of **peptides** in the different parts showed varying patterns. The **peptide** fraction of the dorsal part showed strong umami and fullness. [See preceding abstract for part I.] [From En summ. & tables.]  
CC R (Fish and Marine Products)  
CT DISTRIBUTION; DRIED FOODS; FISH; **FLAVOUR COMPOUNDS**; TUNAS

L9 ANSWER 86 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1991(05):P0181 FSTA  
TI A time course study of **peptide** production in accelerated-ripened Cheddar cheese using reverse phase high performance liquid chromatography.  
AU Cliffe, A. J.; Law, B. A.  
CS AFRC Inst. of Food Res., Reading Lab., Shinfield, Reading RG2 9AT, UK  
SO Food Biotechnology, (1991), 5 (1) 1-17, 22 ref.  
ISSN: 0890-5436  
DT Journal  
LA English  
AB The **peptide** and casein breakdown products of enzyme accelerated and normal Cheddar cheese were monitored during ripening, by reverse phase **HPLC** and PAGE. In contrast to PAGE analysis, the water-soluble N fraction analysed by reverse phase chromatography exhibited more significant differences in pattern. The size of one band detected by reverse phase chromatography related well to Cheddar **flavour** intensity.  
CC P (Milk and Dairy Products)  
CT ANALYTICAL TECHNIQUES; CHEESE VARIETIES; DAIRY PRODUCTS; ELECTROPHORESIS; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; **PEPTIDES**; PROTEINS; CHEDDAR CHEESE; CHEESES SPECIFIC

L9 ANSWER 87 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1991(03):P0091 FSTA  
TI Isolation of low molecular weight taste **peptides** from Vacherin Mont d'Or cheese.  
AU Mojarro de Guerra, S. H.  
CS Eidg. Tech. Hochschule, CH-8092 Zuerich, Switzerland  
SO Dissertation Abstracts International, C, (1990), 51 (3) 365  
ISSN: 0307-6075  
DT Dissertation  
LA English  
AB Low-mol. weight **peptides** were isolated from Vacherin Mont d'Or cheese by extraction with water, ultrafiltration and ligand exchange chromatography on a Sephadex derivative containing N-(2-

pyridylmethyl)glycine groups in copper form, followed by ion exchange chromatography on Aminex A6 and Durum DC4 resin. Subfractions were further characterized by isothiocyanate degradation and **HPLC** of the amino acid derivatives. 7 **peptides** were characterized and evaluated for taste characteristics. 4 dipeptides were compared with synthetic analogues and had a bitter taste. It was assumed that the **peptides** have a positive effect on the **flavour** of Vacherin Mont d'Or cheese.

CC P (Milk and Dairy Products)  
CT CHEESE; DAIRY PRODUCTS; **FLAVOUR**; **PEPTIDES**; PROTEINS;  
SENSORY PROPERTIES; CHEESES SPECIFIC

L9 ANSWER 88 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1990(06):P0122 FSTA

TI **Peptide** composition of enzyme-treated Cheddar cheese slurries, determined by reverse phase high performance liquid chromatography.

AU Cliffe, A. J.; Law, B. A.

CS Dep. of Biotech. & Enzymology, AFRC Inst. of Food Res. - Reading Lab., Shinfield, Reading RG2 9AT, UK

SO Food Chemistry, (1990), 36 (1) 73-80, 20 ref.

ISSN: 0308-8146

DT Journal

LA English

AB Semi-liquid slurries prepared from Cheddar cheese curd were treated with enzymes which accelerate the cheese ripening process. The enzymes, which were added at 20x the recommended rate, were a neutral proteinase from *Bacillus subtilis* and an intracellular peptidase extract from *Streptococcus lactis*. The **peptide** composition of treated and untreated slurries was examined by a previously described reverse-phase **HPLC** technique [see FSTA (1990) 22 2P85]. Results included the following. Untreated samples produced very few chromatogram peaks. Treatment with the proteinase produced a chromatogram consisting of many bands, the appearance of these bands being associated with the formation of a bitter taste. Treatment with proteinase followed by peptidase resulted in a considerable reduction in the height of some bands and an increase in the height of others, and was associated with the disappearance of the bitter taste and the appearance of the normal Cheddar **flavour**.

CC P (Milk and Dairy Products)  
CT CHEESE VARIETIES; DAIRY PRODUCTS; ENZYMES; **FLAVOUR**; HIGH  
PERFORMANCE LIQUID CHROMATOGRAPHY; **PEPTIDES**; PROTEINASES;  
CHEDDAR CHEESE; CHEESES SPECIFIC

L9 ANSWER 89 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1990(01):P0050 FSTA

TI Size-exclusion **HPLC** separation of bitter and astringent fractions from Cheddar cheese made with added *Lactobacillus* strains to accelerate ripening.

AU Lemieux, L.; Puchades, R.; Simard, R. E.

CS Groupe de Recherches STELA, Dep. de Sci. et Tech. des Aliments, Univ. Laval, Sainte-Foy, Que. G1K 7P4, Canada

SO Journal of Food Science, (1989), 54 (5) 1234-1237, 19 ref.

ISSN: 0022-1147

DT Journal

LA English

AB *Lactobacillus* strains were added as an adjunct to the regular lactic starter in Cheddar cheese manufacture, to accelerate ripening. Microbial cheese proteolysis released free amino acids, which were extracted with the astringent and bitter fractions, and separated by size-exclusion and reversed-phase **HPLC**. *Lactobacillus* strains generally increased the degree of proteolysis. *L. plantarum* and *L. brevis* produced off-flavours, possibly due to an accumulation of medium-sized **peptides**. Control cheese (without *lactobacilli*) had the most **peptides** with a mean mol. weight of <1000 Da and had a

**flavour** described as slightly bitter. Addition of L. casei-casei L2A accelerated ripening and yielded a well-aged Cheddar cheese without any bitterness, even after 7 months at 6°C.

CC P (Milk and Dairy Products)  
CT ANALYTICAL TECHNIQUES; BITTER COMPOUNDS; CHEESE VARIETIES; DAIRY PRODUCTS;  
**FLAVOUR**; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; RIPENING; TAINTS;  
ANALYSIS; BITTER PRINCIPLES; CHEDDAR CHEESE; CHEESES SPECIFIC; **OFF**  
**FLAVOUR**

L9 ANSWER 90 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1990(01):P0049 FSTA

TI Debittering mechanism in bitter **peptides** of enzymatic hydrolysates from milk casein by aminopeptidase T.

AU Minagawa, E.; Kaminogawa, S.; Tsukasaki, F.; Yamauchi, K.

CS Dep. of Agric. Chem., Univ. of Tokyo, Bunkyo-ku, Tokyo 113, Japan

SO Journal of Food Science, (1989), 54 (5) 1225-1229, 33 ref.

ISSN: 0022-1147

DT Journal

LA English

AB The bitter **peptide** fraction (BPF) present in casein hydrolysates obtained using 3 proteases (subtilisin, papain and trypsin) was treated with aminopeptidase T from *Thermus aquaticus* YT-1. The bitterness of BPF could be reduced, and sometimes disappeared completely, with an increase in free amino acids. % total free amino acids released from each BPF (subtilisin, papain and trypsin) by aminopeptidase digestion for 20 h were approx. 11, 8.7 and 6.5%, resp. Bitter **peptide** ( $\alpha$ .sub.s1-CN f91-100) was isolated from a tryptic hydrolysate of casein by **HPLC**, its threshold value of bitterness being 2.9 p.p.m. (w/v). The **peptide** ( $\alpha$ .sub.s1-CB f96-100) obtained from amino peptidase digestion of this bitter **peptide** showed no bitterness.

CC P (Milk and Dairy Products)

CT BITTER COMPOUNDS; CASEIN; ENZYMES; **FLAVOUR**; **PEPTIDES**;  
PROTEINASES; PROTEINS; REDUCTION; **BITTER PEPTIDES**; BITTER  
PRINCIPLES; BITTERNESS

L9 ANSWER 91 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1989(12):P0076 FSTA

TI Some differences between Cheddar cheeses made using calf rennet and a microbial coagulant (Rennilase 46L).

AU Creamer, L.; Aston, J.; Knighton, D.

CS New Zealand Dairy Res. Inst., Palmerston North, New Zealand

SO New Zealand Journal of Dairy Science and Technology, (1988), 23 (3)

185-194, 16 ref.

ISSN: 0300-1342

DT Journal

LA English

AB 2 lots of Cheddar cheese were made from the same milk, one in Nov. 1985 and the other in Feb. 1986. Control cheese was made using calf rennet and experimental cheese using a microbial enzyme preparation (Rennilase 46L, Novo Industrie, Denmark). Very slightly different starter cultures were used on the 2 occasions, because one of the cultures used initially became phage sensitive between trials. Cheeses were vacuum packed and matured (20 days at 12°C followed by 6°C). These, and cheeses from a previous study [FSTA (1986) 18 8P40], were sampled at intervals for soluble **peptides** (reversed-phase **HPLC**), casein degradation (gel electrophoresis) and free amino acids. Rheological properties were also determined periodically. Soluble **peptide** levels increased as maturation progressed; **HPLC** and electrophoretic patterns varied with coagulant used. Results suggest that reversed-phase **HPLC** could be used more extensively to study pathways of cheese proteolysis and **flavour** development. As cheeses aged, firmness increased, force required to fracture cheeses remained fairly constant and compression at fracture decreased.

CC P (Milk and Dairy Products)  
CT CHEESE; CHEESE VARIETIES; DAIRY PRODUCTS; ENZYMES MILK CLOTTING;  
MICROORGANISMS; RHEOLOGICAL PROPERTIES; RIPENING; CHEDDAR; CHEDDAR CHEESE;  
CHEESES SPECIFIC; MICROBIAL RENNETS; RENNETS

L9 ANSWER 92 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1989(05):P0056 FSTA  
TI Bitter **peptides** derived from  $\alpha$ .sub.s.sub.1- and  
 $\beta$ -casein digested with alkaline protease from Bacillus subtilis.  
AU Sohn, K. H.; Lee, H. J.  
CS Correspondence (Reprint) address, H. J. Lee, Dep. of Food Sci. & Tech.,  
Coll. of Agric., Seoul Nat. Univ., Suwon 440-744, Korea Republic  
SO Korean Journal of Food Science and Technology, (1988), 20 (5) 659-665, 20  
ref.  
ISSN: 0367-6293

DT Journal  
LA English  
SL Korean

AB Alkaline proteinase can be used to accelerate cheese ripening, although  
bitter **flavour** arising during proteolysis is a major problem.  
 $\alpha$ .sub.s.sub.1- and  $\beta$ -casein were purified by DEAE-cellulose  
chromatography and digested with alkaline proteinase from Bacillus  
subtilis. Bitter fractions from hydrolysates were isolated by n-butanol  
extraction, Sephadex G-25 gel chromatography and **HPLC**.  
**Peptide** mixtures were separated by reversed-phase octadecyl silica  
column chromatography with a linear gradient of 0-80% acetonitrile  
containing 0.1% trifluoroacetic acid. Major peaks were combined from  
replicates and bitterness of each peak was evaluated. Bitter-tasting peaks  
were rechromatographed until isolated peaks were obtained. 3 bitter  
**peptides**, designated BP-1, BP-2 and BP-3, were obtained from  
 $\alpha$ .sub.s.sub.1-casein hydrolysate. BP-1 eluted at 34% acetonitrile,  
BP-2 at 35% and BP-3 at 26%. BP-4 and BP-5 were isolated from  
 $\beta$ -casein hydrolysate: BP-4 eluted at 40% acetonitrile and BP-5 at  
42%. BP-5 was the most hydrophobic of the 5 BP, although BP-1 and BP-2  
tasted more bitter than BP-4 and BP-5.

CC P (Milk and Dairy Products)  
CT BACILLUS; BITTER COMPOUNDS; CASEIN; CHEESE; DAIRY PRODUCTS; ENZYMES;  
**FLAVOUR**; **PEPTIDES**; PROTEINASES; PROTEOLYSIS; RIPENING;  
ACCELERATION # SUBTILIS PROTEINASE; **BITTER PEPTIDES**; BITTER  
PRINCIPLES; CASEIN HYDROLYSATES; HYDROLYSATES

L9 ANSWER 93 OF 96 FSTA COPYRIGHT 2005 IFIS on STN  
AN 1989(01):S0087 FSTA  
TI The warmed-over **flavor** process in beef: a study of meat proteins  
and **peptides**.  
AU Spanier, A. M.; Edwards, J. V.; Dupuy, H. P.  
CS S. Reg. Res. Cent., ARS, USDA, New Orleans, LA 70124, USA  
SO Food Technology, (1988), 42 (6) 110, 112-118, 35 ref.  
ISSN: 0015-6639

DT Journal  
LA English

AB A miniroast model was developed for determination of the contribution of  
presumptive **peptide flavour** principles to 'warmed-over  
**flavour**' (WOF) in meat. The model minimizes effects of lipid  
oxidation by including negligible amounts of fat and decreasing the  
surface area of the test piece (i.e. use of cubed vs. ground beef). 40  
 $\pm$  0.4 g cubes of bovine semimembranosus were baked in 4-oz glass jars  
at 176°C for 15 or 30 min to end point temperature of approx. 60 and  
77°C, resp. These cubes were examined for WOF, weight loss,  
composition, sensory attributes and protein characteristics (by GC,  
SDS-PAGE, reversed-phase **HPLC** and size-exclusion chromatography)  
before cooking and after cooking (at 0 and 2 days of subsequent  
refrigerated storage). Results are detailed. As regards meat  
**flavour** deterioration, TBA reactive substance levels increased in

stored samples, more so in those cooked to 60°C internal temperature; hexanal concentration followed similar patterns. Oxymyoglobin levels were dramatically reduced by storage and by increased cooking temperature, as was % weight loss. Sensory attributes connected to WOF (by a 12-member trained panel) were 'painty' and 'cardboard'. These increased in intensity on storage and were stronger in cubes heated to 60°C. Protein profiles are presented and further work needed to characterize the amino acid sequences associated with sweet/meaty and bitter/sour flavours is described. Advantages of being able to identify specific **flavour peptides** are outlined.

CC S (Meat, Poultry and Game)

CT BEEF; **FLAVOUR**; MEAT; **PEPTIDES**; MODELLING; WARMED-OVER

L9 ANSWER 94 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1988(08):S0045 FSTA

TI Chromatographic isolation of presumptive **peptide flavor** principles from red meat.

AU Spanier, A. M.; Edwards, J. V.

CS S. Reg. Res. Cent., USDA, ARS, 1100 Robert E. Lee Boulevard, New Orleans, Louisiana 70124, USA

SO Journal of Liquid Chromatography, (1987), 10 (12) 2745-2758, 16 ref.  
ISSN: 0148-3919

DT Journal

LA English

AB Top round (bovine semimembranosus and adductor muscles from Black Angus steers) was selected as a model for isolation of presumptive, low molecular mass (M.sub.r) **flavour peptides**. Isolation and purification of **peptides** (<5000 M.sub.r) from 'cooked' and 'cooked-stored-recooked' meat was achieved by combining various chromatographic techniques. **Peptide** samples were obtained by preparing acetic acid extracts of meat, followed by removal of lipids and carbohydrates by phase partition extraction. Lipid-free extracted material is subsequently subjected to size exclusion chromatography using Sephadex G-25, resulting in 2 major polypeptide groups with M.sub.r of 1500-3000. The material is purified further by semipreparative and analytical reversed phase (RP) **HPLC** for separation of hydrophilic and hydrophobic **peptides**. Separation of the **peptides** into 2 groups is particularly important, since perception of sweet taste is associated with hydrophilic, while bitter (and often sour) taste is associated with hydrophobic **peptides**. Semipreparative RP-**HPLC** of **peptides** from the low M.sub.r material revealed highly significant differences in hydrophilic and hydrophobic **peptide** composition of 'cooked' vs. 'cooked-stored-recooked' samples, i.e. the former appeared to have equal amounts of the 2 classes of **peptide** while the latter appeared to contain predominantly hydrophobic **peptides**. **Peptides** obtained semipreparatively were available for further examination by analytical RP-**HPLC** and analysed by diode array detection. The latter method revealed major differences in hydrophobic **peptide** components found in the 2 meat groups.

CC S (Meat, Poultry and Game)

CT BEEF; **FLAVOUR**; **FLAVOUR COMPOUNDS**; MEAT;  
**PEPTIDES**; COOKED

L9 ANSWER 95 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1987(06):P0078 FSTA

TI Contribution of the components of the water-soluble fraction to the **flavour** of Cheddar cheese.

AU Aston, J. W.; Creamer, L. K.

CS New Zealand Dairy Res. Inst., Palmerston North, New Zealand

SO New Zealand Journal of Dairy Science and Technology, (1986), 21 (3)  
229-248, 29 ref.

DT Journal

LA English



AB A study of the water-soluble fraction (WSF) of Cheddar cheese showed that it contributed most to the **flavour** intensity of the cheese, and a simplified method for its extraction was developed. The components of the WSF were separated by reversed-phase **HPLC** and detected at 214 and 280 nm. The overall **flavour** of the WSF was judged by a taste panel to consist of a mixture of saltiness, brothiness, dried milk/casein **flavour** and bitterness. The WSF was fractionated using gel filtration chromatography, and individual sub-fractions were analysed by **HPLC** and assessed for **flavour**. The sub-fraction containing most of the salt, free methionine and free leucine contributed most to the **flavour**, and this sub-fraction also contained several **peptides**. The **flavour** intensity and bitterness of a mixture of calcium lactate, NaCl and free amino acids were lower than those of the unfractionated WSF. These results suggest that the free amino acids make a significant contribution to the **flavour** of the WSF, but other material, presumably **peptides**, is necessary for full **flavour**.

CC P (Milk and Dairy Products)

CT CHEESE; **FLAVOUR**; SOLUBILITY; CHEDDAR; CHEDDAR CHESE; CHEESES SPECIFIC; WATER-SOLUBLE FRACTION

L9 ANSWER 96 OF 96 FSTA COPYRIGHT 2005 IFIS on STN

AN 1986(12):A0076 FSTA

TI [Abstracts of discussion papers and posters presented at the annual meeting of the specialist groups in Heidelberg, September 1985.]  
Referate der auf der Jahrestagung der Fachgruppe in Heidelberg September 1985 gehaltenen Diskussionsvortraege und vorgestellten Poster.

AU Pachmayr, O.; Ledl, F.; Severin, T.; Grosch, W.; Schieberle, P.; Schmidt, W.; Ulrich, F.; Weder, J. K. P.; Mauler, E.; Wieser, H.; Ashkenazi, A.; Daldrup, T.; Boos, K. S.; Wilmers, B.; Juhl, U.; Schlimme, E.; Petz, M.; Dicke, W.; Ocker, H. D.; Thier, H. P.; Haslbeck, F.; Senser, F.; Grosch, W.; Hock, C.; Liemann, F.; Rimkus, G.; Wolf, M.; Wild, D.; Kasier, G.; King, M. T.; Stoya, W.; Wachendoerfer, G.; Kourry, E.; Kaiser, E.

CS Germany, Federal Republic of, Gesellschaft Deutscher Chemiker

SO Lebensmittelchemie und Gerichtliche Chemie, (1986), 40 (3) 54-70

DT Journal

LA German

AB Abstracts are presented of the following papers and posters. Pyridinium betaines and  $\gamma$ -pyridones as products of the Maillard reaction, by Pachmayr, O., Ledl, F. & Severin, T. (pp. 54-55). **Flavour** compounds as indicator substances for evaluation of quality changes in foods, by Grosch, W., Schieberle, P., Schmidt, W. & Ulrich, F. (pp. 55-57, 7 reference). Effects of extrusion on food proteins, by Weder, J. K. P. & Mauler, E. (pp. 57-58, 2 reference). Studies on the relation between structure of **peptides** from gliadin and coeliac disease, by Wieser, H. & Ashkenazi, A. (p. 58, 2 reference). Role of **HPLC** in forensic-toxicological analysis, by Daldrup, T. (pp. 58-60, 4 reference). Food and drug colorants of the arylmethine type: pseudosubstrates and inactivators of nucleotide-dependent functional proteins, by Boos, K. S., Wilmers, B., Juhl, U. & Schlimme, E. (p. 62, 8 reference). Rapid chemical detection of residues of macrolide antibiotics in foods of animal origin, by Petz, M. (pp. 62-63, 4 reference). Behaviour of pyrethroid insecticides in storage and processing of cereals, by Dicke, W., Ocker, H. D. & Thier, H. P. (p. 63). Determination of lipase activity in foods, by Haslbeck, F., Senser, F. & Grosch, W. (pp. 63-64). Chloramphenicol: development and application of a radioimmunoassay, by Hock, C. & Liemann, F. (pp. 64-65, 6 reference). Analysis of organochlorine residues in liver fat of game animals, by Rimkus, G. & Wolf, M. (pp. 65-66, 4 reference). Chemical structure and mutagenic action - model studies on a mutagen from heated meat, by Wild, D., Kasier, G. & King, M. T. (pp. 66-67, 2 reference). Formic acid residues in honey after use of this acid to control varroaosis, by Stoya, W., Wachendoerfer, G., Kourry, E. & Kaiser, E. (p. 67).

CC A (Food Sciences)

CT ANALYTICAL TECHNIQUES; CHEMISTRY; CONFERENCE PROCEEDINGS; RESIDUES;

# ANALYSIS; FOODS; PROCEEDINGS

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=> s cocoa or chocolate

7630 COCOA

6547 CHOCOLATE

L10 12498 COCOA OR CHOCOLATE

=> s flavor or flavour

62750 FLAVOR

612 FLAVOUR

L11 62835 FLAVOR OR FLAVOUR

=> s peptide or peptides

328716 PEPTIDE

240384 PEPTIDES

L12 420867 PEPTIDE OR PEPTIDES

=> s l10 and l11 and l12

L13 39 L10 AND L11 AND L12

=> d l13 chib,ab 1-39

L13 ANSWER 1 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2005:163963 Identification and characterisation of the major aspartic proteinase activity in Theobroma cacao seeds. Guilloteau, Martine; Laloi, Maryse; Michaux, Stephan; Bucheli, Peter; McCarthy, James (Department of Plant Science, Nestle Research Centre, Tours, F-37097, Fr.). Journal of the Science of Food and Agriculture, 85(4), 549-562 (English) 2005. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB Theobroma cacao seeds contain an unusually high level of aspartic proteinase activity. Although this activity is central to the development of high-quality **cocoa flavor**, the Tcacao polypeptide responsible has not yet been definitively identified. Here we report the identification and characterization of an active protein complex from T

cacao seeds with an apparent mol. weight of approx. 50 kDa. This active complex contains at least two polypeptides: an approx. 30.5 kDa aspartic proteinase, the product of the TcAP2 gene, and an associated polypeptide, the 20.5kDa trypsin inhibitor protein. The active complex co-eluted off a size exclusion column with another complex containing the trypsin inhibitor and a putative acid chitinase. The 30.5 kDa TcAP2 proteinase is apparently a monomeric aspartic proteinase with optimal activity between 42 and 47 °C and an optimal pH of 3.0. Significant inactivation of the TcAP2 activity occurs at acid pH around 47-52 °C, a temperature potentially obtained during **cocoa** bean fermentation SDS-PAGE anal. showed that the purified TcAP2 complex efficiently degrades the cacao seed storage protein vicilin into **peptides** smaller than 10 kDa. In addition, high-resolution size exclusion chromatog. showed that this proteinase is capable of degrading proteins into **peptides** as small as di- and tripeptides, indicating for the first time that the main T cacao seed aspartic proteinase can produce very small **peptide** products. Our results demonstrate that the aspartic proteinase encoded by the TcAP2 gene plays a critical role in the production of **cocoa flavor** precursor **peptides** during **cocoa** bean fermentation

L13 ANSWER 2 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2005:122813 Document No. 142:212364 Compositions, kits, and methods for treating gastrointestinal conditions with non-glyceryl esters of long chain fatty acids or long chain fatty acid salts. Kelm, Gary Robert; Clymer, Jeffrey Warren (The Procter & Gamble Company, USA). U.S. Pat. Appl. Publ. US 2005032892 A1 20050210, 8 pp. (English). CODEN: USXXCO. APPLICATION: US 2004-866623 20040612. PRIORITY: US 2003-PV493400 20030807.

AB Disclosed are compns., kits, and methods which are useful for the treatment of gastrointestinal conditions in mammals. In one embodiment, the disclosure is directed to a method of treating a gastrointestinal condition in a mammal in need of such treatment, wherein the method comprises administering to the mammal a composition comprising a non-glyceryl ester of a long chain fatty acid. In another embodiment, the invention is directed to a method of treating a gastrointestinal condition in a mammal in need of such treatment, wherein the method comprises administering to the mammal a bismuth component and a long chain fatty acid component. In yet another embodiment, the disclosure is directed to a kit comprising a composition comprising a non-glyceryl ester of a long chain fatty acid; and information that the composition is useful for the treatment of a gastrointestinal condition in mammals. In still another embodiment, the invention is directed to a kit comprising a long chain fatty acid component, a bismuth component, and information that the composition is useful for the treatment of a gastrointestinal condition in mammals. In yet another embodiment, the disclosure is directed to a composition comprising a long chain fatty acid component selected from the group consisting of long chain fatty acids, non-glyceryl esters of long chain fatty acids, and mixts. thereof, and a bismuth component. The compound is especially Et oleate. A

beverage, a confectionery bar, a tablet, gelatin capsules, and an emulsion containing Et oleate are described.

L13 ANSWER 3 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2004:310653 Document No. 140:320327 Agglomerated granular protein-rich nutritional supplement. Lockwood, Christopher (USA). U.S. Pat. Appl. Publ. US 2004071825 A1 20040415, 16 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-271239 20021015.

AB An agglomerated granular protein-rich nutritional supplement comprises a mixture of: 13-100 percent by weight edible food proteins; 0-57 percent by weight

edible carbohydrates; 0-10 percent by weight edible fats; 0-15 percent by weight

edible dietary vitamins and minerals; 0-78 percent by weight edible amino acids; 0-10 percent by weight edible plant exts., and up to 4 percent by weight

chondroitin sulfate, where the nutritional supplement is agglomerated and granulated in an oral unit dosage form that is directly absorbable onto the tongue or rapidly dissolvable in an aqueous liquid. Specific formulations of

the supplement are disclosed, for use by specific groups of individuals. A method of supplementing the nutritional intake of individuals engaged in bodybuilding and protein supplementation, meal replacement, exercise recovery or mass gaining, comprising orally administering a formulation of the protein-rich nutritional supplement. A method of augmenting the mental acuity and energy of humans, comprising orally administering another formulation of the protein-rich nutritional supplement. Methods also are disclosed for supplementing the nutritional intake of women, male bodybuilders, children and adolescents, and older adults. In all methods, the nutritional supplement is in an oral unit dosage form of either agglomerated granules or a rapidly dissolvable wafer and also includes a flavoring compound and an effervescing compound

L13 ANSWER 4 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2004:213413 Document No. 141:22606 Protein hydrolyzate containing biologically active substances with application in food, feed, pharmaceuticals, fertilizers, and cosmetics. Makarov, N. V.; Novikov, V. I. (Russia). Russ. RU 2221456 Cl 20040120, No pp. given (Russian). CODEN: RUXXE7. APPLICATION: RU 2003-106447 20030311.

AB A protein hydrolyzate is obtained by acid hydrolysis of animal products, with subsequent neutralization, filtration, and drying. Starting materials may include carcasses of livestock or fish, albumins, blood, meat or fish. The hydrolyzate comprises  $\leq 25\%$  **peptides** with mol. weight  $< 3000$  Da and an optical activity  $[\alpha]_{20D}$  of 5-15. The ratio of amino nitrogen:fatty acids:carbohydrates = (10-30):(0.2-2):(0.4-5) and the product also contains sodium, chromium, nickel, cobalt, selenium, calcium, potassium, sulfur, phosphorus, chlorine, iron, zinc, copper, and manganese. The hydrolyzate, containing biol. active substances, may be used in the production of nutritional supplements and food (including dairy products, confectionery, bakery products, fats and oils, sauces, alc. and nonalcoholic beverages, fish and meat products, pasta products, chewing gum, and beer), feed supplements, pharmaceutical and veterinary preps., fertilizers, as an activator of microbiol. processes, and in perfumes, cosmetics, and personal-care items. The product may also improve the storage life and stability of foods, enhancing structural and rheol. properties in combination with high moisture-retaining capacity.

L13 ANSWER 5 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2004:119741 Document No. 140:151622 Multifunctional **flavor** systems and method of use. Gurin, Michael (USA). U.S. Pat. Appl. Publ. US 2004028622 A1 20040212, 18 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-397036 20030325. PRIORITY: US 2002-PV402569 20020812.

AB A composition and method for functionalizing confectionery, chewing gum, oral care and beverage products by intensifying the **flavor** using ingredients comprised of **flavor** potentiators, enhancers, and amplifiers. The composition is further comprised of oral care actives selected to control halitosis and dental plaque utilizing polyphenols and enzymes whose activity levels are protected by stabilization methods. Such stabilization methods enhance and prolong the **flavor** release characteristics of such products.

L13 ANSWER 6 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2004:39619 Document No. 140:93019 Vegetable processing with enzymes.. Chukwu, Uchenna N. (USA). U.S. Pat. Appl. Publ. US 2004009262 A1 20040115, 13 pp., Cont.-in-part of U.S. Pat. Appl. 2003 134,006. (English). CODEN: USXXCO. APPLICATION: US 2003-619403 20030714. PRIORITY: US 1998-196844 19981120; US 2000-495960 20000202.

AB A method of processing a vegetable comprises application of an enzyme to its outer layer for a time that is sufficient to produce an enzyme-degraded vegetable. The enzyme-degraded vegetable is capable of

absorbing components, such as water, additives or enzymes that further process the vegetable.

L13 ANSWER 7 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2003:709673 Document No. 139:349764 Exopeptidases and their application to reduce bitterness in food: a review. Raksakulthai, Rocharake; Haard, Norman F. (Department of Food Science and Technology, University of California, Davis, CA, 95616, USA). Critical Reviews in Food Science and Nutrition, 43(4), 401-445 (English) 2003. CODEN: CRFND6. ISSN: 1040-8398. Publisher: CRC Press LLC.

AB A review. When exopeptidases catalyze hydrolysis of **peptide** bonds, the product(s) may have a less bitter taste, and the free amino acids or small **peptides** formed may function in food as pleasant-tasting **flavor** compds. or as **flavor** precursors. There are several classes of exopeptidase based on specificity for hydrolysis of synthetic substrates. Exopeptidases in foodstuff may be of natural origin or may be extrinsic, i.e., produced by microorganisms or parasites. Exopeptidases used to modify foods are also becoming increasingly available in the industrial enzyme market. Exopeptidases contribute to a variety of quality changes in postharvest fruit, meats, and food ferments. Foodstuff impacted by these enzymes during processing include **cocoa**, beer, aged and cured meat products, koji, fish sauce, ripened cheeses, and protein hydrolyzates. An important role of exopeptidases in food is the hydrolysis of hydrophobic, bitter **peptides**. The relationship between **peptide** structure and sensory transduction/receptor models is discussed. Research on the use of exopeptidases to reduce bitterness is reviewed.

L13 ANSWER 8 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2003:629394 Design and technical trends of process flavors via bio-hydrolysates. Lee, Eldon C.; Eckert, Markus; Kamdem, Ricky; Weerasinghe, Deepthi K. (Corporate R&D Center, International Flavors & Fragrances Inc, Union Beach, NJ, 07735, USA). Abstracts of Papers, 226th ACS National Meeting, New York, NY, United States, September 7-11, 2003, AGFD-011. American Chemical Society: Washington, D. C. (English) 2003. CODEN: 69EKY9.

AB Production and regulatory aspects of process flavors used to impart flavors such as meats, cooked vegetables, nuts and **chocolate** to foodstuffs are reviewed. The starting materials and processing conditions of process flavors are the most critical and practicable way to characterize the products since the resulting composition is extremely complex. Concerning the carcinogenic issue of chloropropanols in hydrolyzed vegetable proteins (HVP), IQ compds. (amino-imidazo-asaarenes), acrylamide, neg. consumer conception on MSG and the BSE (Bovine Spongiform Encephalopathy) issue in Europe as well as allergenic proteins, unique bio-hydrolyzates have been developed by IFF innovative biotechnol. from plant and animal sources. These unique bio-hydrolyzates are ideal, clean label and low cost alternate materials for process **flavor** development. Protein chemical and nucleotide research to investigate sensory properties and chemical structures are discussed using degree of hydrolysis, HPLC size exclusion chromatog., preparative LC fractionation, capillary electrophoresis, amino acid anal., LC-MS/MS identification, **peptide** sequencing and **peptide** synthesis.

L13 ANSWER 9 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2003:511049 Document No. 139:84363 Malleable protein matrix and uses thereof. Simard, Eric; Pilote, Dominique; Dupont, Claude; Lajoie, Nathalie; Paquet, Marcel; Lemieux, Pierre; Goyette, Philippe (Technologies Biolactis Inc., Can.). PCT Int. Appl. WO 2003053158 A2 20030703, 92 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,

VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-CA1988 20021220. PRIORITY: US 2001-PV341232 20011220.

AB The present invention relates to a malleable protein matrix (MPM) which is the reaction product of the agglomeration of proteins after a fermentation process, exhibits biol. activities and is suitable for the incorporation (or encapsulation) of various hydrophilic or lipophilic substances. The present invention also relates to the process for the preparation of the malleable protein matrix and its uses in food, drug, medical and cosmetic products.

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2003:259775 Document No. 138:270655 Process for preparation of **cocoa flavor precursor peptides** from fermented **cocoa** beans and their use for food flavorings. Kochhar, Sunil; Hansen, Carl Erik; Juillerat, Marcel Alexandre; Wille, Hans-Juergen; Buyukpamukcu, Elif; Keely, Brendan; Goodal, David Murray (Societe Des Produits Nestle S.A., Switz.). Eur. Pat. Appl. EP 1298210 A1 20030402, 13 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-123584 20011001.

AB The present invention pertains to **peptides** derived from fermented **cocoa** beans and representing **cocoa** and/or **chocolate flavor** precursors. In particular, the present invention relates to a process for preparing **cocoa** and/or **chocolate flavor precursor peptides** from fermented **cocoa** beans and to the preparation of **cocoa/chocolate flavor** on a synthetic basis, and to the use thereof in the preparation of **chocolate**. The process comprises preparing a **cocoa** nib powder from fermented **cocoa** beans and extraction with aqueous acetic acid (50%). Non-proteinaceous compds. are separated by solid-phase adsorption on Chromabond C8 and collecting the eluate containing **peptides**. The eluate is diluted with 5 vols. of 0.1% trifluoroacetic acid and loaded on a RP-HPLC column equilibrated with 0.14% sodium acetate/0.05% TEA. Elution with an increasing concentration of 80% acetonitrile/0.1% trifluoroacetic acid yields 43 vicillin and albumin **peptides** with a size of 2-25 amino acids that may serve a precursors for **flavor**-active substances. The **peptides** may also be subjected to Maillard reaction with reducing sugars, and digested with proteases.

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2003:259690 Document No. 138:270653 **Flavor-active peptides** from **cocoa** beans. Kochhar, Sunil; Hansen, Carl Erik; Juillerat, Marcel Alexandre (Societe Des Produits Nestle S.A., Switz.). Eur. Pat. Appl. EP 1297753 A1 20030402, 14 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-123585 20011001.

AB The present invention pertains to specific **peptides** obtainable from **cocoa** beans and giving rise to a particular and distinct **flavor** when subjected to a Maillard reaction with reducing sugars. In particular the present invention pertains to the use of said specific **peptides** for the preparation of a **chocolate flavor**, specifically a **cocoa** and a caramel **flavor**, a floral or specifically, a bonbon **flavor**, a breadly **flavor**, a roasted **flavor** and a meat **flavor**.

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2002:831865 Document No. 137:334475 Vicilin **peptides** and their use in the production of **cocoa** and **chocolate** favor.

Kochhar, Sunil; Hansen, Carl Erik; Juillerat, Marcel Alexander (Societe des Produits Nestle S.A., Switz.). Eur. Pat. Appl. EP 1253200 A1 20021030, 19 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-110251 20010425.

AB The present invention pertains to **cocoa** seed proteins having a mol. weight of about 10 and 14 kDa (CSP10 and CSP14), derived from a 69 kDa precursor vicilin. In particular, the present invention relates to the production of said polypeptides via recombinant means and the use of said polypeptides or fragments thereof for the production of **cocoa/chocolate flavor**.

L13 ANSWER 13 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

2002:805704 Document No. 138:2278 Molecular and biochemical characterization of two aspartic proteinases TcAP1 and TcAP2 from Theobroma cacao seeds. Laloi, Maryse; McCarthy, James; Morandi, Olivia; Gysler, Christol; Bucheli, Peter (Department of Plant Science, Nestle Research Center, Tours, 37097/2, Fr.). Planta, 215(5), 754-762 (English) 2002. CODEN: PLANAB. ISSN: 0032-0935. Publisher: Springer-Verlag.

AB Aspartic proteinase (EC 3.4.23) activity plays a pivotal role in the degradation of Theobroma cacao L. seed proteins during the fermentation step of cacao bean processing. Therefore, this enzyme is believed to be critical for the formation of the **peptide** and amino acid **cocoa flavor** precursors that occurs during fermentation. Using cDNA cloning and northern blot anal., we show here that there are at least two distinct aspartic proteinase genes (TcAP1 and TcAP2) expressed during cacao seed development. Both genes are expressed early during seed development and their mRNA levels decrease towards the end of seed maturation. TcAP2 is expressed at a much higher level than TcAP1, although the expression of TcAP1 increases slightly during germination. The proteins encoded by TcAP1 and TcAP2 are relatively different from each other (73% identity). This, and the fact that the two corresponding genes have different expression patterns, suggests that the TcAP1 and TcAP2 proteins may have different functions in the maturing seeds and during germination. Because the TcAP2 gene is expressed at a much higher level during seed development than TcAP1, it is likely that the TcAP2 protein is primarily responsible for the majority of the industrially important protein hydrolysis that occurs during cacao bean fermentation. Finally, TcAP2 has been functionally expressed in the yeast Yarrowia lipolytica. The secreted recombinant protein is able to hydrolyze bovine Hb at acidic pH and is sensitive to pepstatin A, confirming that TcAP2 encodes an aspartic proteinase, and strongly suggests that this gene encodes the well-characterized aspartic proteinase of mature cacao seeds.

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2002:676900 Document No. 138:220579 Activation of remaining key enzymes in dried under-fermented **cocoa** beans and its effect on aroma precursor formation. Misnawi, Jinap, Selamat; Nazamid, Saari; Jamilah, Bakar (Faculty of Food Science and Biotechnology, Universiti Putra Malaysia, Selangor DE, 43400, Malay.). Food Chemistry, 78(4), 407-417 (English) 2002. CODEN: FOCHDJ. ISSN: 0308-8146. Publisher: Elsevier Science Ltd..

AB Incubation-activation of remaining key enzymes in dried under-fermented **cocoa** beans and its effect on aroma precursor formation was studied using defatted unfermented and partly fermented **cocoa** bean powders. Results of the study showed that aspartic endoprotease, carboxypeptidase and invertase were significantly inactivated during fermentation and drying, and the effect of fermentation was significantly lower than

that of drying. The enzyme activities remaining in these beans were still sufficient to carry out enzymic reaction during incubation.

**Peptide** patterns, resulting from incubation of unfermented and partly fermented beans powders, were quite similar to the well-fermented patterns. Meanwhile, free amino acid concns. of the unfermented beans

were significantly increased during the first 4 h of incubation and then remained constant; however, with partly fermented beans, the formation continued and the hydrophobic and total free amino acid concns. reached the value of well-fermented beans after 24 h of incubation. Reducing sugar concns. of both unfermented and partly fermented **cocoa** beans could reach the level of well-fermented beans by incubation.

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2002:449437 Document No. 137:19738 **Flavour** enhancement in **chocolate** crumb with milk solids and sugars and vegetable protein hydrolyzates. Hansen, Carl Erik; Kochhar, Sunil; Juillerat, Marcel Alexandre (Societe des Produits Nestle S.A., Switz.). PCT Int. Appl. WO 2002045520 A1 20020613, 23 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-EP12343 20011019. PRIORITY: GB 2000-26717 20001101.

AB A process for the preparation of **chocolate** crumb comprising mixing and heating from 15 to 70 % by weight of milk solids, with 10 to 75 % weight of sugar and 0.1 to 10 % by weight of milk or vegetable protein hydrolyzates, the percentages being based on the weight of the mixture

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2002:408695 Document No. 136:385272 A novel **cocoa** albumin and its use in the production of **cocoa** and **chocolate** **flavour**. Kochhar, Sunil; Hansen, Carl Erik; Juillerat, Marcel Alexandre; McCarthy, James (Societe Des Produits Nestle S.A., Switz.). PCT Int. Appl. WO 2002042327 A2 20020530, 25 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-EP13536 20011121. PRIORITY: EP 2000-125523 20001121.

AB A novel 2S **cocoa** albumin was isolated, purified and identified from **cocoa** beans. Enzymatic hydrolysis of the protein generated a pool of **flavor** precursors, **peptides** and amino acids that resulted in formation of **cocoa** **flavor** upon heating with sugars. The DNA encoding a precursor **cocoa** 2S protein was isolated from immature Theobroma **cocoa** seeds.

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2002:408476 Document No. 136:406863 Treatment of mucositis. Rosenthal, Gary J.; Etter, Jeffrey B.; Rodell, Timothy C.; Schauer, Wren H.; Samaniego, Adrian (RxKinetix, Inc., USA). PCT Int. Appl. WO 2002041837 A2 20020530, 40 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US44186 20011121. PRIORITY: US 2000-721516 20001122.

AB This present invention provides a therapeutic composition for use in the treatment of mucositis and a method for using such a therapeutic composition



The therapeutic composition includes a pharmaceutical effective for treating mucositis formulated with a biocompatible polymer, such as a biocompatible reverse-thermal gelation polymer. The antioxidant, N-acetyl-L-cysteine (NAC), was formulated in delivery matrixes by mixing the following components under sterile conditions: N-acetylcysteine 10, Pluronic F127 16.25, and chitosan 0.5%, and 0.57M NaOH solution. NAC formulations reduced the mean clin. mucositis scores relative to the vehicle and water controls, with the NAC formulated in Pluronic F127 being the most effective.

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2001:604203 Document No. 136:98017 Isolation and Characterization of 2S **Cocoa** Seed Albumin Storage Polypeptide and the Corresponding cDNA. Kochhar, Sunil; Gartenmann, Karin; Guilloteau, M.; McCarthy, J. (Nestle Research Center, Lausanne, CH-1000, Switz.). Journal of Agricultural and Food Chemistry, 49(9), 4470-4477 (English) 2001. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB The amine pool of **cocoa** is known to be an essential component for the development of the typical **cocoa flavor**. To better understand and to produce an intense in vitro **cocoa flavor**, identification of the polypeptides that are the source of the amine **flavor** precursor pool is essential. Chromatog. anal. of the polypeptide profile of unfermented **cocoa** resulted in identification of a novel storage polypeptide of Mr 8515. The N-terminal sequence of the first 34 residues of the purified polypeptide shows similarity to 2S storage albumins of cotton and Brazil nut and sweet protein, Mabinlin. To identify the corresponding cDNA of the putative **cocoa** 2S albumin, 18 randomly chosen clones from the cDNA library of immature Theobroma cacao seed mRNA were sequenced, and a full-length cDNA clone encoding a protein harboring the N-terminal sequence of the novel polypeptide was selected. The open reading frame of the clone encodes a polypeptide of Mr 17125. Comparison of the translated amino acid sequence of the precursor protein or the mature polypeptide against the Swiss-Prot and TrEMBL databases shows high sequence similarity (>52%) and identity (>38%) to many plant 2S albumins. Tryptic **peptide** mass fingerprinting of the purified polypeptide by high-performance liquid chromatog.-electrospray ionization mass spectrometry shows 10 masses that match the expected tryptic **peptides** of the deduced sequence. Together with the published work on plant 2S albumin processing, the results presented here suggest that post-translational processing yields a 73-residue polypeptide (residue positions 78-150) corresponding to the 9 kDa subunit of the mature **cocoa** 2S albumin protein.

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2000:410912 Document No. 133:149535 Comparison of enzyme activities involved in **flavour** precursor formation in unfermented beans of different **cocoa** genotypes. Hansen, Carl E.; Manez, Angel; Burri, Christine; Bousbaine, Ahmed (Nestle Research Centre, Nestec Ltd, Lausanne, CH-1000/26, Switz.). Journal of the Science of Food and Agriculture, 80(8), 1193-1198 (English) 2000. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB The activities of endoprotease, aminopeptidase, carboxypeptidase and invertase (cotyledon and pulp) were studied in unfermented beans of 10 genotype samples with different **flavor** characteristics (high and low **cocoa flavor**). Anal. of variance showed that significant differences in enzyme activities exist between certain genotypes. Aminopeptidase and endoprotease activities in beans of the PA7 genotype were higher than in all others. Principal component anal. (PCA) showed that the PA7 genotype (high **cocoa flavor**) was very different from the UIT1 genotype (low **cocoa flavor**). Although significant differences exist, no simple and general relationship is established between the **flavor** potential of a genotype and the level of key enzyme activities in unfermented beans. Carboxypeptidase is of key importance for **peptide** and free amino

acid formation, but differences in enzyme activity could not be correlated to **flavor** potential of the genotype. It is suggested that the level of enzyme activities present in unfermented beans is not a limiting factor for optimal formation of **flavor** precursors during the fermentation process.

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1997:97182 Document No. 126:103373 Proteinase treatment of **cocoa** to optimize **flavor** development. Hansen, Carl Erik; Klueppel, Anthony; Raetz, Eric (Societe Des Produits Nestle S.A., Switz.). Eur. Pat. Appl. EP 749694 A1 19961227, 11 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE. (French). CODEN: EPXXDW. APPLICATION: EP 1995-201668 19950620.

AB **Cocoa** beans or liquors are treated with a proteinase in an aqueous medium at pH 3-8 until a level of 10  $\mu$ mol hydrophobic amino acids/g dry wt (and 1.4-fold the **peptide** level present in the fermented beans) is attained. The enzymic treatment is used to optimize precursors for **flavor** development.

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1997:77185 Document No. 126:88557 **Cocoa flavor** precursor **peptides**, DNA encoding them, processes for producing the **peptides**, and their use for generating **cocoa flavor**. Rasmussen, Soeren; Bach, Mogens (Aarhus Oliefabrik A/S, Den.). PCT Int. Appl. WO 9638472 A1 19961205, 37 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-DK230 19960531. PRIORITY: DK 1995-616 19950601.

AB **Cocoa flavor** precursor **peptides** comprising 2-11 amino acid residues, in particular the nonapeptide Ala-Pro-Leu-Ser-Pro-Gly-Asp-Val-Phe, are isolated and characterized from West African **cocoa** beans. A DNA sequence comprising the code of the **peptides** is synthesized, and this is inserted into replicable vectors. A recombinant host cell transformed with an expression vector containing one or more copies of the DNA sequence operably connected with control sequences which are recognized by the host cell, is cultivated to form the **peptides**, and these are isolated from the cultivation mixture. A **cocoa flavor** is produced by mixing one or more of the **peptides** with predominantly reducing saccharides and amino acids and roasting the mixture. The **cocoa flavor** may be added to food products, cosmetic products, or pharmaceutical products or may be formed in situ in these.

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1996:46153 Document No. 124:85316 **Peptide** composition of the fermented **cocoa** bean in relation to **flavor** quality. Gramshaw, J. W.; James, S. (Procter Dep. of Food Science, University of Leeds, Leeds, LS2 9JT, UK). Colloques - Institut National de la Recherche Agronomique, 75(Bioflavour 95), 315-18 (English) 1995. CODEN: COLIEZ. ISSN: 0293-1915. Publisher: Institut National de la Recherche Agronomique.

AB Fermented **cocoa** beans which differ in their ability to produce good **cocoa** and **chocolate flavor** have been distinguished on the basis of profiles produced upon ligand exchange chromatog. (LEC) using cupric Chelex as a stationary phase. Fractions separated by LEC have been further investigated by reverse-phase (ion pair) high performance liquid chromatog. (RP-HPLC) and shown to contain complex mixts. of **peptides**, certain of which are believed to function as **flavor** precursors.

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1994:433589 Document No. 121:33589 Proteolytic formation of **cocoa** **flavor** precursors. Voigt, J.; Biehl, B.; Heinrichs, H. (Bot. Inst. der Tech., Univ. Braunschweig, Braunschweig, 3300, Germany). Prog. Flavour Precursor Stud. Proc. Int. Conf., Meeting Date 1992, 213-16. Editor(s): Schreier, Peter; Winterhalter, Peter. Allured: Carol Stream, Ill. (English) 1993. CODEN: 59YYAE.

AB **Cocoa**-specific **flavor** precursors were generated during autolysis at pH 5.2 of acetone dry powder prepared from unfermented **cocoa** seeds. Hydrophobic free amino acids and hydrophilic **peptides** were preferentially formed under these conditions. At pH 3.5, no **cocoa**-specific **flavor** precursors were obtained and no amino acids were liberated. The mixture of hydrophobic **peptides** generated during autolysis of acetone dry powder at pH 3.5 was transformed to hydrophilic **peptides** and hydrophobic free amino acids by digestion with carboxypeptidase A from porcine pancreas. This mixture of hydrophilic **peptides** and hydrophobic free amino acids revealed **cocoa**-specific aroma after roasting in the presence of reducing sugars. When these **flavor** precursors were substituted by a synthetic mixture of free amino acids adapted to the spectrum of free amino acids in fermented **cocoa** seeds, only one out of 17 testers was able to recognize **cocoa** **flavor**. The authors conclude that hydrophilic **peptides** formed by successive digestion of a seed protein by an endoprotease and a carboxypeptidase are **cocoa**-specific aroma precursors.

L13 ANSWER 24 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1994:53389 Document No. 120:53389 Ionic complexes of ionizable emulsifiers with ionizable polypeptides and/or ionizable hydrocolloids. Reimer, Robert A.; Carruthers, Mark S.; Corr, Robert J., Jr.; Miller, James W.; Tarlton, Eugene (Pfizer Inc., USA). PCT Int. Appl. WO 9321784 A1 19931111, 37 pp. DESIGNATED STATES: W: AU, CA, JP, KR, NO, RU, UA, US; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1993-US2167 19930316. PRIORITY: US 1992-872869 19920423.

AB Complexes of ionizable emulsifiers with ionizable polypeptides and ionizable hydrocolloids are described for use as fat substitutes, food opacifiers, foam stabilizers and **flavor** modifiers. They are further useful as stiffeners for oils and oil-water emulsions allowing the use of normally liquid unsatd. oils in place of saturated fats in food compns. such as shortenings and spreads. Whey protein concentrate 40 was dissolved in water 600 g and a mixture of stearic acid 60% and palmitic acid 40% 100 g was added with stirring and heating to 75°. The pH of the mixture was adjusted to pH 6.8 with NaOH to form an opaque, viscous solution that after cooling and refrigeration had the appearance, odor, and texture of soft fat. The use of the fat substitutes of the invention in spreads, frosting, desserts, mayonnaise etc. is demonstrated.

L13 ANSWER 25 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1992:402186 Document No. 117:2186 Cloning and expression of cDNA for 21 kDa **cocoa** protein and precursor. Spencer, Margaret Elizabeth; Hodge, Rachel (Mars G. B. Ltd., UK). PCT Int. Appl. WO 9119800 A1 19911226, 46 pp. DESIGNATED STATES: W: AU, BR, CA, FI, GB, HU, JP, KR, NO, PL, RO, SU, US; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1991-GB913 19910607. PRIORITY: GB 1990-13017 19900611.

AB The cDNA for a 21 kDa protein (I), the **peptide** **flavor** protein, of **cocoa** (*Theobroma cacao*) is cloned, sequenced, and expressed. A cDNA library of immature **cocoa** bean (at .apprx.130 days after pollination) was constructed by known methods, and the I cDNA identified with labeled DNA probes based on the N-terminal protein sequence of I. The I cDNA was cloned into pJLA502, an expression vector of *Escherichia coli*, to prepare plasmids pMS107 and pMS113 for expression of the I gene in protease-deficient *E. coli* CAG629. The transformants manufactured 5-10 mg I/L. Also given was the expression of I gene in

Saccharomyces cerevisiae and Hansenula polymorpha.

L13 ANSWER 26 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1991:184062 Document No. 114:184062 Aromagrams of off-flavors. Ney, K. H. (Hamburg, Germany). Gordian, 90(11), 216-18 (German) 1990. CODEN: GORDAM. ISSN: 0017-2243.

AB Aromagrams are applied for the description of off-flavors. In the case of inner and outer off-flavors, the off-components are mentioned with name and formula and hatching of the areas of importance is drawn at a right angle to the usual hatching, thus the off-flavors are also marked optically. Describing off-flavors due to imbalances, where no new compds. occur, but the concentration of component(s) usually present exceeds a certain limit, a denser hatching represents this fact. In this case there is also an optical representation of the off-**flavor**, differentiated clearly on the other hand from the picture of inner and outer off-flavors. Examples of **cocoa** and Cheddar cheese off-flavors demonstrate the value of the new presentation. The influence of imbalance off-flavors is discussed, stressing the need for more quant. **flavor** anal.

L13 ANSWER 27 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1991:178931 Document No. 114:178931 Differential feeding responses evoked in the rat by NPY and NPY1-27 injected intracerebroventricularly. Paez, Ximena; Nyce, J. W.; Myers, R. D. (Sch. Med., East Carolina Univ., Greenville, NC, 27858, USA). Pharmacology, Biochemistry and Behavior, 38(2), 379-84 (English) 1991. CODEN: PBBHAU. ISSN: 0091-3057.

AB Neuropeptide Y (NPY) given by the intracerebroventricular (ICV) route in the rat evokes hyperphagic-like feeding. To exam. the mol. nature of action of NPY, comparisons were made between the central effects of this **peptide** and a newly synthesized amino-terminus fragment, NPY1-27. A single guide tube was implanted stereotaxically to rest just above a lateral cerebral ventricle so that ICV injection in a volume of 10 µL of either CSF control vehicle or **peptide** could be given in the unrestrained rat. Native NPY or NPY1-27 was given in doses of 5.0 or 10.0 µg, whereas nondeprotected NPY was infused in a dose of 10.0 µg. The intakes of either regular com. rat diet or specially prepared **chocolate**-flavored biscuits as well as water were recorded intermittently for 4.0 h following each ICV infusion. Although a clear-cut dose response with a latency of similar magnitude emerged for both mols., NPY was found to be nearly twice as potent as NPY1-27 in inducing spontaneous feeding. A corresponding infusion in the same volume of either nondeprotected NPY or CSF control vehicle was without effect. When **chocolate-flavor** biscuits were provided to the rat, an ICV infusion of a 10.0 µg dose of NPY enhanced significantly both rate of eating and total cumulative intake of flavored food in comparison to that after a similar infusion of NPY1-27 or either control solution. Apparently, native NPY acting centrally affects gustatory and/or olfactory systems to a much greater degree than does NPY1-27. Consequently, the carboxy terminus amino acids 28-36 appear to be essential in shifting the sensory threshold for food ingested by the rat and thus may govern the overall magnitude of its intake.

L13 ANSWER 28 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1990:117612 Document No. 112:117612 Alpha-L-aspartyl-D-phenylglycine esters and amides useful as high intensity sweeteners. Janusz, John M. (Procter and Gamble Co., USA). U.S. US 4692512 A 19870908, 23 pp. Cont.-in-part of U.S. Ser. No. 630,504, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1985-811585 19851220. PRIORITY: US 1984-630504 19840713.

AB Compds. of formula I (R = optionally substituted Ph; R1 = branched or cyclic hydrocarbyl; X = O, NH; the ester or amide is the D,L stereoisomer) are useful as high intensity sweetening agents for foods, beverages, and other oral products. α-L-Aspartyl-D-phenylglycine-(-)-α-fenchyl ester 0.6, gum base 68, corn syrup 16, and **flavor** 1 parts were used to manufacture a low-calorie chewing gum. The sweetener was prepared from D-phenylglycine, α-fenchol, and L-aspartic acid in a

4-step process.

L13 ANSWER 29 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1990:97132 Document No. 112:97132 Heat-induced **flavor** formation from **peptides**. Rizzi, George P. (Miami Val. Lab., Procter and Gamble Co., Cincinnati, OH, 45239-8707, USA). ACS Symposium Series, Volume Date 1988, 409(Therm. Gener. Aromas), 172-81 (English) 1989. CODEN: ACSMC8. ISSN: 0097-6156.

AB **Peptides** can degrade during food processing to form novel taste compds., such as diketopiperazines (DKPs), or react with reducing sugars to produce volatile Maillard products. Eleven DKPs were detected in com. cocoas and model studies substantiated a DKP formation mechanism involving intramol. cyclization of linear **peptide** precursors. Model Maillard reactions of **peptides** and fructose generated Strecker degradation products from amino acids with blocked amine and carboxyl functionalities.

L13 ANSWER 30 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1986:512769 Document No. 105:112769 **Cocoa flavor** - bitter compounds as its essential taste components. Ney, K. H. (Hamburg, D-2000/54, Fed. Rep. Ger.). Gordian, 86(5), 84, 86, 88 (German) 1986. CODEN: GORDAM. ISSN: 0017-2243.

AB Theobromine and diketopiperazines apparently act synergistically to produce the bitter taste of **cocoa**. The bitter taste of theobromine was pH dependent, the sensitivity being increased around pH 5 compared to higher pH values. Diketopiperazines, which are formed by cyclization of 2 amino acids, had a degree of bitterness which followed the Q rule developed previously for amino acids, **peptides**, and proteins (Ng, K. H., 1972). Q is the sum of contributions of individual amino acids to the free energy of unfolding of the **peptide** (or diketopiperazine) divided by the number of amino acid residues. The value of Q. >1350 correlates with a bitter taste for **peptides** <6000 mol. weight, but not for **peptides** >6000 mol. weight. The following compds. had the best (strongest) bitter taste among the diketopiperazines tested: cyclo(Phe-Ala), cyclo(Phe-Leu), cyclo(Phe-Val), and cyclo(Phe-Phe). The range of Q values for these compds. was 1690-2650. Previous data on the bitterness of **peptides** in relation to structure and the formulation of the Q rule are given.

L13 ANSWER 31 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1985:559396 Document No. 103:159396 Acidification, proteolysis and **flavor** potential in fermenting **cocoa** beans. Biehl, Boele; Brunner, Ernst; Passern, Detlef; Quesnel, Victor C.; Adomako, Daniel (Bot. Inst., Tech. Univ. Carolo-Wilhelmina, Braunschweig, Fed. Rep. Ger.). Journal of the Science of Food and Agriculture, 36(7), 583-98 (English) 1985. CODEN: JSFAAE. ISSN: 0022-5142.

AB **Cocoa** ferms. in Ghana and Trinidad as well as anaerobic fermentation-like incubations of fresh **cocoa** beans in Germany were carried out under controlled conditions. Samples of beans were taken during the course of these treatments and detns. were made as to acidification (pH, HOAc content), proteolysis (free  $\alpha$ -amino N, **peptide** N and SDS electrophoresis of the protein **peptides**) and **flavor** potential (gas chromatog. of the highly volatile compds., in particular isopentanal [590-86-3] and organoleptic anal. after thin layer roasting). A pos. correlation between acidification, proteolysis and the development of **flavor** potential during anaerobic fermentation can be demonstrated in principle. However, the **flavor** potential is increased if the temperature rise is comparatively slow in both normal fermentation and laboratory incubation. Strong acidification and

high accumulation of amino acids and **peptides** were not essential for a good **flavor** potential. The isopentanal content was a useful indicator of the progress of normal fermentation in the tropics. These findings can be interpreted on the basis of earlier results about

germination-like processes in the protein vacuoles, pre- and post-mortem subcellular structures and the special characteristics of HOAc diffusion. Conclusions which are relevant to the practice of **cocoa** fermentation are discussed in more detail.

L13 ANSWER 32 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1985:503763 Document No. 103:103763 **Cocoa** and(or) coffee substitutes. (Ajinomoto Co., Inc., Japan). Jpn. Kokai Tokkyo Koho JP 60049751 A2 19850319 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-157511 19830829.

AB A composition containing **cocoa** and (or) coffee **flavor** and one or more of the bitter amino acids (e.g., isoleucine, leucine, lysine, methionine, phenylalanine, tryptophan, valine, arginine, histidine, citruline, ornithine, and proline) and **peptides** is a **cocoa** and (or) coffee substitute and also an amino acid supplement health drink.

L13 ANSWER 33 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1983:574510 Document No. 99:174510 Vacuolar (storage) proteins of **cocoa** seeds and their degradation during germination and fermentation. Biehl, Boele; Wewetzer, Christa; Passern, Detlef (Bot. Inst., Tech. Univ. Carolo-Wilhelmina, Braunschweig, Fed. Rep. Ger.). Journal of the Science of Food and Agriculture, 33(12), 1291-304 (English) 1982. CODEN: JSFAAE. ISSN: 0022-5142.

AB In proteolysis during anaerobic **cocoa** seed incubation, 2 protein bands separated by disk and Na dodecyl sulfate-gel electrophoretic protein anal. (2.6 + 104 and 4.4 + 104 daltons) were vacuolar storage proteins which accumulated during seed ripening (90-160 days after pollination) and which were specifically utilized during germination. Although the storage proteins were poorly soluble at pH 3.5-4.5, proteolysis during incubation of Me2CO dry powders was highest in this pH range. All proteins were digested at 50° and pH 4.5. During seed incubation at 50° and pH 4.5, the storage proteins were degraded preferentially although the cells were dead at 50°. This degradation was increased by preincubation at 40° instead of 50°. The results are discussed in the light of structural peculiarities in the seed tissue and the possible role of specific endopeptidases and **peptides** in the formation of **flavor** precursors during fermentation

L13 ANSWER 34 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1976:134238 Document No. 84:134238 Specificity of **cocoa** aroma. Mohr, W.; Landschreiber, E.; Severin, T. (Inst. Lebensmitteltechnol. Verpack., Univ. Muenchen, Munich, Fed. Rep. Ger.). Fette, Seifen, Anstrichmittel, 78(2), 88-95 (German) 1976. CODEN: FSASAX. ISSN: 0015-038X.

AB Substances extracted from **cocoa** beans (fermented and unfermented) and also model systems consisting of known compds. (sugars, amino acids, organic and inorg. acids, alkaloids, and inorg. salts) were roasted and the resulting aromas were compared sensorily to those of roasted beans. Especially crucial for aroma formation were a group of **cocoa** bean **peptides**, which were isolated and analyzed for the amino acid content.

L13 ANSWER 35 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1975:441772 Document No. 83:41772 Aroma-producing mixture. Pickenhagen, Wilhelm; Dietrich, Paul; Keil, Borivoj; Lederer, Edgar (Firmenich S. A., Switz.). Ger. Offen. DE 2445674 19750410, 25 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1974-2445674 19740925.

AB Mixts. of theobromine with dipeptides (open chain or cyclic) have a bitter taste which is useful in supplying the proper bitter note in food and beverage formulations. The **peptides** are synthesized by known methods. In an example, a mixture of 1 mg. cyclophenylalanylphenylalanine, 2 mg cyclophenylalanylvaline, and 10 mg theobromine was added to 100 ml

milk along with 0.08 ml **cocoa** flavoring and 2 g soluble **cocoa** flavoring and 2 g soluble **cocoa** powder with a neutral **flavor**. The resulting beverage was as flavorful as that prepared from 4 g **cocoa** in 100 ml milk.

L13 ANSWER 36 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1972:2699 Document No. 76:2699 Formation of **cocoa** aroma from its precursors. Mohr, W.; Roehrl, M.; Severin, Th. (Inst. Lebensmitteltechnol. Verpack., Munich, Fed. Rep. Ger.). Fette, Seifen, Anstrichmittel, 73(8), 515-21 (German) 1971. CODEN: FSASAX. ISSN: 0015-038X.

AB The isolation and chemical composition of a highly purified mixture of aroma precursors from raw **cocoa** were extensively studied and the alterations due to heating at roasting temps. were followed quant. **Cocoa** aroma was formed in the course of a Maillard reaction between amino acids and reducing sugars. Participation of oligopeptides in the alterations that were specific for the roasting were detected for the first time. From the high-boiling components present in the product, a fraction having the typical **cocoa flavor** could be isolated and resolved by gas chromatog.

L13 ANSWER 37 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1971:418988 Document No. 75:18988 Assessment of some claims relating to the production and composition of **chocolate** aroma. Lopez, Alexander; Quesnel, Victor C. (Cocoa Res. Unit, Univ. West Indies, St. Augustine, Trinidad/Tobago). Revue Internationale de la Chokolaterie, 26(1), 19-20, 22-4 (English) 1971. CODEN: RCHOA8. ISSN: 0035-3345.

AB By mixing different compds. expts. were made to identify substances responsible for **chocolate flavor** and to compound an artificial **chocolate** aroma. Testing for type of **flavor** of the aqueous or alc. solns. was made by smelling or tasting. Heated mixts. of reducing substances and amino acids or **peptides** gave odors which resembled some foods but not **chocolate**. A synthetic **chocolate flavor** was produced containing isovaleraldehyde dimethyl disulfide, acetophenone, pyrazine mixture, phenylacetaldehyde, guaiacol, maltol, pyruvic acid, furfural, pyrrole, and acetic acid.

L13 ANSWER 38 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1958:107116 Document No. 52:107116 Original Reference No. 52:18958b-d Artificial **chocolate flavor**. Rusoff, Irving I. (General Foods Corp.). US 2835590 19580520 (Unavailable). APPLICATION: US.

AB Artificial **chocolate flavor** is produced by treating a reducing saccharide with any glycylyl or alanyl **peptide**. The **flavor** was enhanced by the addition of one or more amino acids. Thus, glycyglycine was mixed with dextrose in the ratio of 5:1, 30 weight % H<sub>2</sub>O was added to give a pasty consistency, and the mixture was heated at 130° for 8 min. on an oil bath to yield a product brown in color, friable, and soluble in water. Bitterness and astringency are incorporated into the **flavor** by the addition of alkaloids and tannins, resp. The alkaloids used are theobromine and caffeine. The astringencies are quebracho and chestnut tannins. The product is used as substitute for natural **chocolate flavor** or as a fortifier or extender.

L13 ANSWER 39 OF 39 CAPLUS COPYRIGHT 2005 ACS on STN

1958:26939 Document No. 52:26939 Original Reference No. 52:4886c-e Synthetic **chocolate**. Ruskin, Simon L. US 2816834 19571217 (Unavailable). APPLICATION: US.

AB Synthetic **chocolate** is prepared from mixts. of sucrose, fat, milk, starch, and a solution of casein hydrolyzate (I), methionine, furfuryl alc., lysine, and theobromine. A **chocolate flavor** is said to result from the combination of amino acids and alkaloids or other materials present in the mixts. Furfural derivs., especially

(hydroxymethyl)furfural and mercaptofurfural, reinforce the **flavor**. It is claimed that small amts. of mercaptofurfural are produced by reaction of I containing methionine with furfuryl alc. and that (hydroxymethyl)furfural is produced by heating certain sugar components. A pooled hydrolyzate of soybeans, yeast, or meat, or a mixed hydrolyzate from food wastes, can be substituted for the I. The hydrolyzate should contain **peptides** having mol. wts. of 5000-10,000 since these **peptides** are responsible for the desirable color of the product. It is claimed that the product will be nonallergenic if the hydrolyzate is produced by acid or alkaline hydrolysis so that tryptophan is destroyed.

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(FILE 'HOME' ENTERED AT 11:50:37 ON 04 MAY 2005)

FILE 'FSTA' ENTERED AT 11:50:48 ON 04 MAY 2005

L1 10873 S COCOA OR CHOCOLATE  
L2 108 S L1 AND FLAVOR  
L3 42334 S FLAVOR OR FLAVOUR  
L4 1282 S L1 AND L3  
L5 7421 S PEPTIDE OR PEPTIDES  
L6 24 S L4 AND L5  
L7 711 S L3 AND L5  
L8 2 S L7 AND TRIFLUOROACETIC  
L9 96 S L7 AND HPLC

FILE 'CAPLUS' ENTERED AT 11:54:15 ON 04 MAY 2005

L10 12498 S COCOA OR CHOCOLATE  
L11 62835 S FLAVOR OR FLAVOUR  
L12 420867 S PEPTIDE OR PEPTIDES  
L13 39 S L10 AND L11 AND L12

=> s l10 and l12

L14 143 L10 AND L12

=> s l14 and trifluoroacetic

168 TRIFLUOROACETIC  
L15 0 L14 AND TRIFLUOROACETIC

=> s l14 and hplc

158740 HPLC  
L16 10 L14 AND HPLC

=> d l16 cbib,ab 1-10

L16 ANSWER 1 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN  
2004:1009366 Document No. 142:279571 Biochemical applications in the analytical chemistry lab. Strong, Cynthia; Ruttencutter, Jeffrey (Department of Chemistry, Cornell College, Mount Vernon, IA, 52314, USA). Journal of Chemical Education, 81(12), 1706-1707 (English) 2004. CODEN: JCEDA8. ISSN: 0021-9584. Publisher: Journal of Chemical Education, Dept. of Chemistry.

AB The project described in this report focuses on the sophomore-level anal. laboratory. An **HPLC** and a UV-visible spectrophotometer were identified as instruments that would help incorporate more biol.-relevant expts. into the course, in order to increase students' understanding of selected biochem. topics and enhance their ability to apply an anal. approach to biochem. problems. Three expts. are being developed or adapted for the anal. course. In the first experiment, students use the UV-visible spectrophotometer and the Bio-Rad protein assay to determine total protein. Students prepare a dilute solution of **cocoa** mix, use micropipettors to prepare a series of stds. and add the dye reagent, and then record the visible spectra. In the second experiment, students hydrolyze a powdered protein



nutritional supplement, derivatize the amino acids, and analyze the mixture by **HPLC** on a C18 column, with UV detection. Each student or pair of students det. the position of one or two amino acids in the chromatogram and the concentration of those amino acids. A third new experiment is a

student development of a method to sep. a mixture of several biol. mols. using low-pressure gel filtration and ion exchange columns. The three expts. described involve amino acids, **peptides**, and proteins.

L16 ANSWER 2 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

2003:629394 Design and technical trends of process flavors via bio-hydrolysates. Lee, Eldon C.; Eckert, Markus; Kamdem, Ricky; Weerasinghe, Deepthi K. (Corporate R&D Center, International Flavors & Fragrances Inc, Union Beach, NJ, 07735, USA). Abstracts of Papers, 226th ACS National Meeting, New York, NY, United States, September 7-11, 2003, AGFD-011. American Chemical Society: Washington, D. C. (English) 2003. CODEN: 69EKY9.

AB Production and regulatory aspects of process flavors used to impart flavors such as meats, cooked vegetables, nuts and **chocolate** to foodstuffs are reviewed. The starting materials and processing conditions of process flavors are the most critical and practicable way to characterize the products since the resulting composition is extremely complex. Concerning the carcinogenic issue of chloropropanols in hydrolyzed vegetable proteins (HVP), IQ compds. (amino-imidazo-asaarenes), acrylamide, neg. consumer conception on MSG and the BSE (Bovine Spongiform Encephalopathy) issue in Europe as well as allergenic proteins, unique bio-hydrolyzates have been developed by IFF innovative biotechnol. from plant and animal sources. These unique bio-hydrolyzates are ideal, clean label and low cost alternate materials for process flavor development. Protein chemical and nucleotide research to investigate sensory properties and chemical structures are discussed using degree of hydrolysis, **HPLC** size exclusion chromatog., preparative LC fractionation, capillary electrophoresis, amino acid anal., LC-MS/MS identification, **peptide** sequencing and **peptide** synthesis.

L16 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

2003:259775 Document No. 138:270655 Process for preparation of **cocoa** flavor precursor **peptides** from fermented **cocoa** beans and their use for food flavorings. Kochhar, Sunil; Hansen, Carl Erik; Juillerat, Marcel Alexandre; Wille, Hans-Juergen; Buyukpamukcu, Elif; Keely, Brendan; Goodal, David Murray (Societe Des Produits Nestle S.A., Switz.). Eur. Pat. Appl. EP 1298210 A1 20030402, 13 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-123584 20011001.

AB The present invention pertains to **peptides** derived from fermented **cocoa** beans and representing **cocoa** and/or **chocolate** flavor precursors. In particular, the present invention relates to a process for preparing **cocoa** and/or **chocolate** flavor precursor **peptides** from fermented **cocoa** beans and to the preparation of **cocoa/chocolate** flavor on a synthetic basis, and to the use thereof in the preparation of **chocolate**. The process comprises preparing a **cocoa** nib powder from fermented **cocoa** beans and extraction with aqueous acetic acid (50%). Non-proteinaceous compds. are separated by solid-phase adsorption on Chromabond C8 and collecting the eluate containing **peptides**. The eluate is diluted with 5 vols. of 0.1% trifluoroacetic acid and loaded on a RP-**HPLC** column equilibrated with 0.14% sodium acetate/0.05% TEA. Elution with an increasing concentration of 80% acetonitrile/0.1%

trifluoroacetic

acid yields 43 vicillin and albumin **peptides** with a size of 2-25 amino acids that may serve a precursors for flavor-active substances. The **peptides** may also be subjected to Maillard reaction with reducing sugars, and digested with proteases.

L16 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

2002:355622 Document No. 137:62467 Oligopeptide patterns produced from *Theobroma cacao* L of various genetic origins. Amin, I.; Jinap, S.; Jamilah, B.; Harikrisna, K.; Biehl, B. (Faculty of Food Science and Biotechnology, Universiti Putra Malaysia, Serdang, 43400, Malay.). *Journal of the Science of Food and Agriculture*, 82(7), 733-737 (English) 2002. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB Acetone dry powder (AcDP) was prepared for six **cocoa** genotypes, namely Forastero (Amelonado type), Criollo, Trinitario, SCA 12, UIT1 and PBC 140. Hydrophobic oligopeptides were produced when autolysis of AcDP was carried out at pH 3.5. Comparative **HPLC** anal. showed that autolysis of AcDP from various genotypes revealed a similar pattern of oligopeptides. Most of the hydrophobic oligopeptides were not generated during autolysis of AcDP in the presence of protease inhibitor (Pepstatin A), indicating that the generation of these oligopeptides was due to the action of **cocoa** cotyledon aspartic endoprotease. This finding implies that the splitting action of aspartic endoprotease on vicilin (7S)-class globulin (VCG) from various genotypes was the same. The information from the study provides addnl. evidence that there are no obvious differences in VCG composition between various genotypes.

L16 ANSWER 5 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

2000:679057 Document No. 134:38457 Primary Structure of the Abundant Seed Albumin of *Theobroma cacao* by Mass Spectrometry. Kochhar, Sunil; Gartenmann, Karin; Juillerat, Marcel A. (Nestle Research Center, Lausanne, CH-1000, Switz.). *Journal of Agricultural and Food Chemistry*, 48(11), 5593-5599 (English) 2000. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB The most abundant albumin present in seeds of *Theobroma cacao* was purified to apparent homogeneity as judged by high-performance liquid chromatog./electrospray ionization mass spectrometry (**HPLC** /ESI-MS), sodium dodecyl sulfate-polyacrylamide gel electrophoresis, and NH2-terminal sequence anal. Tryptic **peptide** mass fingerprinting of the purified protein by **HPLC**/ESI-MS showed the presence of 16 masses that matched the expected tryptic **peptides** corresponding to 95% of the translated amino acid sequence from the cDNA of the 21 kDa **cocoa** albumin. Collision-induced dissociation MS/MS anal. of the C-terminal **peptide** isolated from the CNBr cleavage products provided unequivocal evidence that the mature **cocoa** albumin protein is nine amino acid residues shorter than expected from the reported cDNA of its corresponding gene. The exptl. determined Mr value of 20234 was in excellent agreement with the truncated version of the amino acid sequence. The purified **cocoa** albumin inhibited the catalytic activities of bovine trypsin and chymotrypsin. The inhibition was stoichiometric with 1 mol of trypsin or chymotrypsin being inhibited by 1 mol of inhibitor with apparent dissociation consts. (Ki) of  $9.5 \times 10^{-8}$  and  $2.3 \times 10^{-6}$  M, resp., for inhibitor binding at pH 8.5 and 37°. No inhibition of the catalytic activities of subtilisin, papain, pepsin, and **cocoa** endoproteases was detected under their optimal reaction conditions.

L16 ANSWER 6 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

1998:31140 Document No. 128:145341 Pharmaceutical compositions containing cyclopeptides. Jonczyk, Alfred; Holzemann, Gunter; Felding-Habermann, Brunhilde; Rippmann, Friedrich; Melzer, Guido; Diefenbach, Beate (Merck Patent Gesellschaft mit Beschränkter Haftung, Germany). U.S. US 5705481 A 19980106, 6 pp., Cont.-in-part of U.S. Ser. No. 147,519, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1995-436601 19950508. PRIORITY: DE 1992-4237456 19921106; US 1993-147519 19931105.

AB Pharmaceutical compns. contain novel cyclopeptides of the formula cyclo-(A-B-C-D-Arg) (A and B each independently of one another = Ala, Asn, Asp, Arg, Cys, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr,

Trp, Tyr or Val; C = Asp or Asp (O-C14 alkyl); and D = Gly or Ala); at least two of the amino acid radicals stated being present in the D-form; and their salts. These compds. act as integrin inhibitors and can be used in particular for the prophylaxis and treatment of disorders of the circulation and in tumor therapy. A solution of 30 mg of cyclo-(D-Val-L-Phe-D-Asp(OBut)-Gly-D-Arg(Mtr)) [obtained by cyclization of H-D-Arg(Mtr)-D-Val-L-Phe-D-Asp(OBut)-Gly-OH] in 840 mL of TFA, 170 mL of dichloromethane and 85 mL of thiophenol was allowed to stand at 20° for 2 h, then concentrated under reduced pressure at 37° and freeze-dried after dilution with water. After gel filtration on Sephadex G 10 in acetic acid/water 1:1 and subsequent purification by preparative HPLC on a LiChrosorb RP8 column with an isopropanol gradient in 0.3% TFA/water, cyclo(D-Val-L-Phe-D-Asp-Gly-D-Arg) was obtained; retention time = 17.9 min; mol. weight in the mass spectrum = 575. A mixture of 20 g of above cyclopeptide fused with 100 g of soya lecithin and 1400 g of **cocoa** butter, the mixture was then poured into molds and allowed to cool. Each suppository contained 20 mg of the **peptide**.

L16 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

1997:100049 Document No. 126:196543 Isolation and molecular characterization of four arginine/glutamate rich polypeptides from the seeds of sponge gourd (*Luffa cylindrica*). Ishihara, Hisashi; Sasagawa, Takahiro; Sakai, Ritsu; Nishikawa, Masateru; Kimura, Makoto; Funatsu, Gunki (Laboratory of Protein Chemistry and Engineering, Kyushu University, Fukuoka, 812-81, Japan). Bioscience, Biotechnology, and Biochemistry, 61(1), 168-170 (English) 1997. CODEN: BBBIEJ. ISSN: 0916-8451. Publisher: Japan Society for Bioscience, Biotechnology, and Agrochemistry.

AB Four arginine/glutamate rich polypeptides referred to as 5k-, 6.5k-, 12.5k-, and 14k-AGRPs were purified to homogeneity by gel filtration on Sephadex G-75 followed by CM-cellulose, butyl-Toyopearl 650M, and reverse-phase HPLC from the seed of sponge gourd (*Luffa cylindrica*). Tricine SDS-PAGE indicated that 5k- and 6.5k-AGRPs are single polypeptides, but 12.5k- and 14k-AGRPs consist of two polypeptide chains, which are linked by disulfide bond(s). The N-terminal amino acid sequences of four AGRPs were analyzed by a gas-phase sequencer, and the result indicated that they are distinct mols. Comparison of the sequences with those of proteins in the protein database demonstrates that 5k- and 6.5k-AGRPs have a significant homol. with a basic **peptide** from pumpkin seeds and with **cocoa** seed vicilin, resp., and that 12.5k- and 14k-AGRPs are related to 2 S seed storage proteins. Furthermore, it was assumed that the four AGRPs might occur in the protein bodies within cells of the seed.

L16 ANSWER 8 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

1996:46153 Document No. 124:85316 **Peptide** composition of the fermented **cocoa** bean in relation to flavor quality. Gramshaw, J. W.; James, S. (Procter Dep. of Food Science, University of Leeds, Leeds, LS2 9JT, UK). Colloques - Institut National de la Recherche Agronomique, 75(Bioflavour 95), 315-18 (English) 1995. CODEN: COLIEZ. ISSN: 0293-1915. Publisher: Institut National de la Recherche Agronomique.

AB Fermented **cocoa** beans which differ in their ability to produce good **cocoa** and **chocolate** flavor have been distinguished on the basis of profiles produced upon ligand exchange chromatog. (LEC) using cupric Chelex as a stationary phase. Fractions separated by LEC have been further investigated by reverse-phase (ion pair) high performance liquid chromatog. (RP-HPLC) and shown to contain complex mixts. of **peptides**, certain of which are believed to function as flavor precursors.

L16 ANSWER 9 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN

1990:6436 Document No. 112:6436 Enrichment of leucine, alanine, phenylalanine, and tyrosine in the free amino acids of fermented **cocoa**. Biehl, B.; Kirchoff, P. M.; Ziegler-Berghausen, H. (Bot.

Inst., Tech. Univ. Braunschweig, Braunschweig, Fed. Rep. Ger.). GBF Monograph Series, Volume Date 1988, 11(Enzyme Lebensmitteltechnol.), 91-6 (German) 1989. CODEN: GMSEDJ. ISSN: 0930-4312.

- AB The free amino acid composition of fermented **cocoa** beans and of **cocoa** seeds after fermentation-like incubations was determined by **HPLC**. Leucine, alanine, phenylalanine, and tyrosine predominate by far. The total seed protein consists of significantly less of these 4 hydrophobic amino acids and contains more of the acidic amino acids. Three explanations are given which are supported by preliminary results: (1) the vacuolar storage protein which is hydrolyzed during fermentation is enriched in these hydrophobic amino acids, (2) free acidic amino acids are metabolized in the seed before the onset of postmortem proteolysis, and (3) **cocoa** seed endopeptidases are aspartic acid proteinases. This type of enzyme gives rise to **peptides** with hydrophobic amino acids in the terminal positions, which are the first to be attacked by exopeptidases. Free amino acids are significant in **cocoa** aroma formation in roasting.

L16 ANSWER 10 OF 10 CAPLUS COPYRIGHT 2005 ACS on STN  
1986:530441 Document No. 105:130441 A metabolite from *Cladobotryum amazonense* with antibiotic activity. Bastos, C. N.; Neill, S. J.; Horgan, R. (Dep. Espec. Amazonia, CEPLAC, Belem, Brazil). Transactions of the British Mycological Society, 86(4), 571-8 (English) 1986. CODEN: BMSTA6. ISSN: 0007-1536.

- AB An antibiotic substance was produced by the fungus *C. amazonense*, a hyperparasite of *Crinipellis perniciosus*, the causal fungus of witches' broom disease of **cocoa**. The antibiotic was isolated and purified by extraction into BuOH followed by chromatog. on LH-20, paper, and **HPLC**. Antibiotic activity was detected and quantified by a germination assay using conidia of *Botrytis fabae*. The structure of the antibiotic is not yet known, but qual. tests indicated that it was a polypeptide. In culture tests in vitro, the antibiotic inhibited mycelial growth and spore germination of a wide variety of plant-pathogenic fungi. It also inhibited growth of many gram-pos. bacteria, a few gram-neg. bacteria, and some streptomycetes.

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(FILE 'HOME' ENTERED AT 11:50:37 ON 04 MAY 2005)

FILE 'FSTA' ENTERED AT 11:50:48 ON 04 MAY 2005

L1 10873 S COCOA OR CHOCOLATE  
L2 108 S L1 AND FLAVOR  
L3 42334 S FLAVOR OR FLAVOUR  
L4 1282 S L1 AND L3  
L5 7421 S PEPTIDE OR PEPTIDES  
L6 24 S L4 AND L5  
L7 711 S L3 AND L5  
L8 2 S L7 AND TRIFLUOROACETIC  
L9 96 S L7 AND HPLC

FILE 'CAPLUS' ENTERED AT 11:54:15 ON 04 MAY 2005

L10 12498 S COCOA OR CHOCOLATE  
L11 62835 S FLAVOR OR FLAVOUR  
L12 420867 S PEPTIDE OR PEPTIDES  
L13 39 S L10 AND L11 AND L12  
L14 143 S L10 AND L12  
L15 0 S L14 AND TRIFLUOROACETIC  
L16 10 S L14 AND HPLC

=> s l14 and amino(w)acids

1022029 AMINO  
1474418 ACIDS

# 339505 AMINO(W)ACIDS

L17 54 L14 AND AMINO(W)ACIDS

=> d 117 cbib,ab 1-54

L17 ANSWER 1 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2005:983 Document No. 142:79607 Compositions and methods for skin rejuvenation and repair. Jain, Deepak (USA). U.S. Pat. Appl. Publ. US 2004265268 A1 20041230, 18 pp., Cont.-in-part of U.S. Ser. No. 222,949. (English). CODEN: USXXCO. APPLICATION: US 2004-821427 20040409. PRIORITY: US 2001-PV313306 20010818; US 2001-PV313307 20010818; US 2001-PV313313 20010818; US 2001-PV313314 20010818; US 2002-222949 20020816.

AB The present invention provides compns. for the repair of mammalian skin. The compns. contain cell growth enhancers to increase the growth rate of skin cells, stimulators of cell growth enhancers, nutrients to support log phase growth of skin cells, cell protectors to protect growing cells and enhanced cellular activity, antioxidants to protect rejuvenated cells, extracellular matrix proteins, stimulators of extracellular matrix proteins, and penetration enhancers. The compns. of the present invention are effective for repairing and rejuvenating mammalian skin, such that aging skin treated with the compns. has a significant reduction in the number of fine lines and wrinkles in the skin. The compns. are also effective for promoting the healing of skin that has suffered a wound, such as a sunburn or abrasion, and for promoting the growth of hair on the scalp.

L17 ANSWER 2 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2004:1058380 Document No. 142:43460 Cosmetic additives, bath preparations, and health foods containing extracts of sake lees produced in brewing using deep-sea water. Mitsui, Yukio; Hato, Katsuhiko; Imada, Katsumi (Nihon Tennenbutsu Kenkyusho K. K., Japan). Jpn. Kokai Tokkyo Koho JP 2004346045 A2 20041209, 35 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-147054 20030526.

AB Cosmetic additives, bath prepns, and health foods contain the sake lees exts. which contain **amino acids, peptides,** minerals, tyrosinase inhibitors,  $\alpha$ -amylase inhibitors, superoxide anion radical scavengers, etc. Thus, lees derived from sake brewed suing deep-sea water was extracted with EtOH at room temperature for 6 h, filtered, and the filtrate was vacuum-concentrated The residue was mixed with H2O and the separated oily part was removed with EtOAc. The aqueous solution was vacuum-concentrated to give sake lees extract A lotion containing the extract had SOD-like activity and tyrosinase-inhibiting activity.

L17 ANSWER 3 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2004:1009366 Document No. 142:279571 Biochemical applications in the analytical chemistry lab. Strong, Cynthia; Ruttencutter, Jeffrey (Department of Chemistry, Cornell College, Mount Vernon, IA, 52314, USA). Journal of Chemical Education, 81(12), 1706-1707 (English) 2004. CODEN: JCEDA8. ISSN: 0021-9584. Publisher: Journal of Chemical Education, Dept. of Chemistry.

AB The project described in this report focuses on the sophomore-level anal. laboratory An HPLC and a UV-visible spectrophotometer were identified as instruments that would help incorporate more biol.-relevant expts. into the course, in order to increase students' understanding of selected biochem. topics and enhance their ability to apply an anal. approach to biochem. problems. Three expts. are being developed or adapted for the anal. course. In the first experiment, students use the UV-visible spectrophotometer and the Bio-Rad protein assay to determine total protein. Students prepare a dilute solution of **cocoa** mix, use micropipettors to prepare a series of stds. and add the dye reagent, and then record the

visible spectra. In the second experiment, students hydrolyze a powdered protein

nutritional supplement, derivatize the **amino acids**, and analyze the mixture by HPLC on a C18 column, with UV detection. Each student or pair of students detcs. the position of one or two **amino acids** in the chromatogram and the concentration of those **amino acids**. A third new experiment is a student development of a method to sep. a mixture of several biol. mols. using low-pressure gel filtration and ion exchange columns. The three expts. described involve **amino acids**, **peptides**, and proteins.

L17 ANSWER 4 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2004:310653 Document No. 140:320327 Agglomerated granular protein-rich nutritional supplement. Lockwood, Christopher (USA). U.S. Pat. Appl. Publ. US 2004071825 A1 20040415, 16 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-271239 20021015.

AB An agglomerated granular protein-rich nutritional supplement comprises a mixture of: 13-100 percent by weight edible food proteins; 0-57 percent by weight

edible carbohydrates; 0-10 percent by weight edible fats; 0-15 percent by weight

edible dietary vitamins and minerals; 0-78 percent by weight edible **amino acids**; 0-10 percent by weight edible plant exts., and up to 4 percent by weight chondroitin sulfate, where the nutritional supplement is agglomerated and granulated in an oral unit dosage form that is directly absorbable onto the tongue or rapidly dissolvable in an aqueous liquid. Specific formulations of the supplement are disclosed, for use by specific groups of individuals. A method of supplementing the nutritional intake of individuals engaged in bodybuilding and protein supplementation, meal replacement, exercise recovery or mass gaining, comprising orally administering a formulation of the protein-rich nutritional supplement. A method of augmenting the mental acuity and energy of humans, comprising orally administering another formulation of the protein-rich nutritional supplement. Methods also are disclosed for supplementing the nutritional intake of women, male bodybuilders, children and adolescents, and older adults. In all methods, the nutritional supplement is in an oral unit dosage form of either agglomerated granules or a rapidly dissolvable wafer and also includes a flavoring compound and an effervescing compound

L17 ANSWER 5 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2003:709673 Document No. 139:349764 Exopeptidases and their application to reduce bitterness in food: a review. Raksakulthai, Rocharake; Haard, Norman F. (Department of Food Science and Technology, University of California, Davis, CA, 95616, USA). Critical Reviews in Food Science and Nutrition, 43(4), 401-445 (English) 2003. CODEN: CRFND6. ISSN: 1040-8398. Publisher: CRC Press LLC.

AB A review. When exopeptidases catalyze hydrolysis of **peptide** bonds, the product(s) may have a less bitter taste, and the free **amino acids** or small **peptides** formed may function in food as pleasant-tasting flavor compds. or as flavor precursors. There are several classes of exopeptidase based on specificity for hydrolysis of synthetic substrates. Exopeptidases in foodstuff may be of natural origin or may be extrinsic, i.e., produced by microorganisms or parasites. Exopeptidases used to modify foods are also becoming increasingly available in the industrial enzyme market. Exopeptidases contribute to a variety of quality changes in postharvest fruit, meats, and food ferms. Foodstuff impacted by these enzymes during processing include **cocoa**, beer, aged and cured meat products, koji, fish sauce, ripened cheeses, and protein hydrolyzates. An important role of exopeptidases in food is the hydrolysis of hydrophobic, bitter **peptides**. The relationship between **peptide** structure and sensory transduction/receptor models is discussed. Research on the use of exopeptidases to reduce bitterness is reviewed.

L17 ANSWER 6 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2003:511049 Document No. 139:84363 Malleable protein matrix and uses thereof. Simard, Eric; Pilote, Dominique; Dupont, Claude; Lajoie, Nathalie; Paquet, Marcel; Lemieux, Pierre; Goyette, Philippe (Technologies Biolactis Inc., Can.). PCT Int. Appl. WO 2003053158 A2 20030703, 92 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-CA1988 20021220. PRIORITY: US 2001-PV341232 20011220.

AB The present invention relates to a malleable protein matrix (MPM) which is the reaction product of the agglomeration of proteins after a fermentation process, exhibits biol. activities and is suitable for the incorporation (or encapsulation) of various hydrophilic or lipophilic substances. The present invention also relates to the process for the preparation of the malleable protein matrix and its uses in food, drug, medical and cosmetic products.

L17 ANSWER 7 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2003:259775 Document No. 138:270655 Process for preparation of **cocoa** flavor precursor **peptides** from fermented **cocoa** beans and their use for food flavorings. Kochhar, Sunil; Hansen, Carl Erik; Juillerat, Marcel Alexandre; Wille, Hans-Juergen; Buyukpamukcu, Elif; Keely, Brendan; Goodal, David Murray (Societe Des Produits Nestle S.A., Switz.). Eur. Pat. Appl. EP 1298210 A1 20030402, 13 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-123584 20011001.

AB The present invention pertains to **peptides** derived from fermented **cocoa** beans and representing **cocoa** and/or **chocolate** flavor precursors. In particular, the present invention relates to a process for preparing **cocoa** and/or **chocolate** flavor precursor **peptides** from fermented **cocoa** beans and to the preparation of **cocoa/chocolate** flavor on a synthetic basis, and to the use thereof in the preparation of **chocolate**. The process comprises preparing a **cocoa** nib powder from fermented **cocoa** beans and extraction with aqueous acetic acid (50%). Non-proteinaceous compds. are separated by solid-phase adsorption on Chromabond C8 and collecting the eluate containing **peptides**. The eluate is diluted with 5 vols. of 0.1% trifluoroacetic acid and loaded on a RP-HPLC column equilibrated with 0.14% sodium acetate/0.05% TEA. Elution with an increasing concentration of 80% acetonitrile/0.1% trifluoroacetic acid yields 43 vicillin and albumin **peptides** with a size of 2-25 **amino acids** that may serve a precursors for flavor-active substances. The **peptides** may also be subjected to Maillard reaction with reducing sugars, and digested with proteases.

L17 ANSWER 8 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2002:779713 Document No. 138:13577 Influence of carboxypeptidases on free amino acid, **peptide** and methylpyrazine contents of under-fermented **cocoa** beans. Yusep, I.; Jinap, S.; Jamilah, B.; Nazamid, S. (Department of Food Science, Faculty of Food Science and Biotechnology, Universiti Putra Malaysia, Selangor Darul Ehsan, 43400, Malay.). Journal of the Science of Food and Agriculture, 82(13), 1584-1592 (English) 2002. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB A study of the action of two carboxypeptidases on free **amino acids**, **peptides** and methylpyrazines in under-fermented **cocoa** beans was carried out. Carboxypeptidase B from porcine pancreas and carboxypeptidase Y from baker's yeast were used sep. for

digestion. Hydrophobic free **amino acids** (alanine, valine, isoleucine, leucine, phenylalanine and tyrosine) were predominantly produced in samples digested with both carboxypeptidase B and Y. The **peptide** patterns of samples digested with both carboxypeptidases were similar to that of the control. The concentration of 2,3,5,6-tetramethylpyrazine in samples with carboxypeptidase B addition was significantly higher than those of 2,5-dimethyl- and 2,3,5-trimethylpyrazine; the concentration of 2,3,5-trimethylpyrazine was highest (1727.86 µg per 100 g) in the sample with carboxypeptidase B addition that had been incubated for 24 h. These findings indicate that carboxypeptidase B from porcine pancreas was more prominent in the formation of **cocoa**-specific aroma.

L17 ANSWER 9 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2002:676900 Document No. 138:220579 Activation of remaining key enzymes in dried under-fermented **cocoa** beans and its effect on aroma precursor formation. Misnawi; Jinap, Selamat; Nazamid, Saari; Jamilah, Bakar (Faculty of Food Science and Biotechnology, Universiti Putra Malaysia, Selangor DE, 43400, Malay.). Food Chemistry, 78(4), 407-417 (English) 2002. CODEN: FOCHDJ. ISSN: 0308-8146. Publisher: Elsevier Science Ltd..

AB Incubation-activation of remaining key enzymes in dried under-fermented **cocoa** beans and its effect on aroma precursor formation was studied using defatted unfermented and partly fermented **cocoa** bean powders. Results of the study showed that aspartic endoprotease, carboxypeptidase and invertase were significantly inactivated during fermentation and drying, and the effect of fermentation was significantly lower than

that of drying. The enzyme activities remaining in these beans were still sufficient to carry out enzymic reaction during incubation.

**Peptide** patterns, resulting from incubation of unfermented and partly fermented beans powders, were quite similar to the well-fermented patterns. Meanwhile, free amino acid concns. of the unfermented beans were significantly increased during the first 4 h of incubation and then remained constant; however, with partly fermented beans, the formation continued and the hydrophobic and total free amino acid concns. reached the value of well-fermented beans after 24 h of incubation. Reducing sugar concns. of both unfermented and partly fermented **cocoa** beans could reach the level of well-fermented beans by incubation.

L17 ANSWER 10 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2002:449437 Document No. 137:19738 Flavour enhancement in **chocolate** crumb with milk solids and sugars and vegetable protein hydrolyzates. Hansen, Carl Erik; Kochhar, Sunil; Juillerat, Marcel Alexandre (Societe des Produits Nestle S.A., Switz.). PCT Int. Appl. WO 2002045520 A1 20020613, 23 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-EP12343 20011019. PRIORITY: GB 2000-26717 20001101.

AB A process for the preparation of **chocolate** crumb comprising mixing and heating from 15 to 70 % by weight of milk solids, with 10 to 75 % weight of sugar and 0.1 to 10 % by weight of milk or vegetable protein hydrolyzates, the percentages being based on the weight of the mixture

L17 ANSWER 11 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2002:408695 Document No. 136:385272 A novel **cocoa** albumin and its use in the production of **cocoa** and **chocolate** flavour. Kochhar, Sunil; Hansen, Carl Erik; Juillerat, Marcel Alexandre; McCarthy,



James (Societe Des Produits Nestle S.A., Switz.). PCT Int. Appl. WO 2002042327 A2 20020530, 25 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-EP13536 20011121. PRIORITY: EP 2000-125523 20001121.

AB A novel 2S **cocoa** albumin was isolated, purified and identified from **cocoa** beans. Enzymatic hydrolysis of the protein generated a pool of flavor precursors, **peptides** and **amino acids** that resulted in formation of **cocoa** flavor upon heating with sugars. The DNA encoding a precursor **cocoa** 2S protein was isolated from immature Theobroma **cocoa** seeds.

L17 ANSWER 12 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2002:89808 Document No. 136:139606 Use and cosmetic compositions of starch betainates. Dubief, Claude (L'oreal, Fr.). PCT Int. Appl. WO 2002007699 A1 20020131, 44 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (French). CODEN: PIXXD2. APPLICATION: WO 2001-FR2267 20010712. PRIORITY: FR 2000-9612 20000721.

AB The invention concerns a cosmetic use of at least a starch betainate for treating keratinous matter, in particular keratinous fibers and the skin, comprising said starch betainate combined with at least an agent beneficial for keratinous matter. The invention also concerns a cosmetic treatment method and a use of said composition, in particular as after-shampoo and hair styling lotion. An after-shampooing composition contained starch betainate 0.5, behenyl-trimethylammonium chloride 1.5, a mixture of cetyl stearyl alc. and ethoxylated cetyl stearyl alc. (80:20) 4, and water q.s. 100 g.

L17 ANSWER 13 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2002:51280 Document No. 136:107539 Preparation of high pressure/high shear pharmaceutical/cosmetic dispersions containing waxes and other semi-solids and oils. Ceccoli, Joseph D.; Ross, Michael; Wilmott, James M.; Coleman, Todd; Crawford, Timothy K. (Collaborative Technologies, Inc., USA). PCT Int. Appl. WO 2002004004 A1 20020117, 37 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US21746 20010711. PRIORITY: US 2000-PV217617 20000711.

AB The present invention provides an oil-in-water wax dispersion comprising 1 or more waxes or hydrophobic semi-solids, a dispersion initiator, optionally 1 or more plasticizers or solvents and/or co-solvents, and water. The invention also provides a method for preparing these oil-in-water wax dispersions and their use in topical, oral, anal, ophthalmic, vaginal, otic, cosmetic and nasal formulations. Thus, a dispersion contained water 59.76, Germazide MPB 1.44, Crodacol CS-50 8.10, hydrogenated polyisobutene 18.90, Basis LP20H 1.80, and butylene glycol 10.00.

L17 ANSWER 14 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2001:885661 Document No. 136:5161 Dietary supplement with antioxidant activity containing an alkanoyl carnitine and a combination of polyphenols extracted from **cocoa**. Pola, Pietro (Sigma-Tau Healthscience S.P.A., Italy). PCT Int. Appl. WO 2001091590 A1 20011206, 19 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-IT262 20010523. PRIORITY: IT 2000-RM297 20000530.

AB A health food/dietary supplement with antioxidant activity contains an alkanoyl carnitine and a combination of polyphenols extracted from **cocoa**. Thus, the supplement may contain 500 mg propionyl L-carnitine and 250 mg **cocoa** polyphenol extract

L17 ANSWER 15 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2001:604203 Document No. 136:98017 Isolation and Characterization of 2S **Cocoa** Seed Albumin Storage Polypeptide and the Corresponding cDNA. Kochhar, Sunil; Gartenmann, Karin; Guilloteau, M.; McCarthy, J. (Nestle Research Center, Lausanne, CH-1000, Switz.). Journal of Agricultural and Food Chemistry, 49(9), 4470-4477 (English) 2001. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB The amine pool of **cocoa** is known to be an essential component for the development of the typical **cocoa** flavor. To better understand and to produce an intense in vitro **cocoa** flavor, identification of the polypeptides that are the source of the amine flavor precursor pool is essential. Chromatog. anal. of the polypeptide profile of unfermented **cocoa** resulted in identification of a novel storage polypeptide of Mr 8515. The N-terminal sequence of the first 34 residues of the purified polypeptide shows similarity to 2S storage albumins of cotton and Brazil nut and sweet protein, Mabinlin. To identify the corresponding cDNA of the putative **cocoa** 2S albumin, 18 randomly chosen clones from the cDNA library of immature Theobroma cacao seed mRNA were sequenced, and a full-length cDNA clone encoding a protein harboring the N-terminal sequence of the novel polypeptide was selected. The open reading frame of the clone encodes a polypeptide of Mr 17125. Comparison of the translated amino acid sequence of the precursor protein or the mature polypeptide against the Swiss-Prot and TrEMBL databases shows high sequence similarity (>52%) and identity (>38%) to many plant 2S albumins. Tryptic **peptide** mass fingerprinting of the purified polypeptide by high-performance liquid chromatog.-electrospray ionization mass spectrometry shows 10 masses that match the expected tryptic **peptides** of the deduced sequence. Together with the published work on plant 2S albumin processing, the results presented here suggest that post-translational processing yields a 73-residue polypeptide (residue positions 78-150) corresponding to the 9 kDa subunit of the mature **cocoa** 2S albumin protein.

L17 ANSWER 16 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2000:410912 Document No. 133:149535 Comparison of enzyme activities involved in flavour precursor formation in unfermented beans of different **cocoa** genotypes. Hansen, Carl E.; Manez, Angel; Burri, Christine; Bousbaine, Ahmed (Nestle Research Centre, Nestec Ltd, Lausanne, CH-1000/26, Switz.). Journal of the Science of Food and Agriculture, 80(8), 1193-1198 (English) 2000. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB The activities of endoprotease, aminopeptidase, carboxypeptidase and invertase (cotyledon and pulp) were studied in unfermented beans of 10 genotype samples with different flavor characteristics (high and low **cocoa** flavor). Anal. of variance showed that significant

differences in enzyme activities exist between certain genotypes. Aminopeptidase and endoprotease activities in beans of the PA7 genotype were higher than in all others. Principal component anal. (PCA) showed that the PA7 genotype (high **cocoa** flavor) was very different from the UIT1 genotype (low **cocoa** flavor). Although significant differences exist, no simple and general relationship is established between the flavor potential of a genotype and the level of key enzyme activities in unfermented beans. Carboxypeptidase is of key importance for **peptide** and free amino acid formation, but differences in enzyme activity could not be correlated to flavor potential of the genotype. It is suggested that the level of enzyme activities present in unfermented beans is not a limiting factor for optimal formation of flavor precursors during the fermentation process.

L17 ANSWER 17 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2000:321456 Document No. 132:352791 Pharmaceutical suppository composites for fever and influenza and method of producing the composites. Hsu, Wu-ching; Keng, Su-hsien (Taiwan). U.S. US 6063383 A 20000516, 17 pp. (English). CODEN: USXXAM. APPLICATION: US 1999-238744 19990128.

AB Pharmaceutical suppository composites for fever and influenza and a method of producing them are disclosed. More particularly, the composites combine all the advantages of traditional Chinese medicine, Western medicine, and phys. temperature reduction to relieve symptoms of influenza. Poisonous side effects can be avoided by using the disclosed suppositories. The pharmaceutical suppository composites comprise 2750-3250 g radix bupleuri scorzonrifolium wild, 1750-2250 g flos lonicerae japonicae, 1950-2450 g fructus forsythiae, 1650-2150 g fructus arctii, 2550-3050 g herba schizonepetae, 50-550 g calculus bovis, and 870-1370 g of excipients.

L17 ANSWER 18 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

2000:85025 Document No. 132:121794 Foodstuffs prepared from food materials and enzymes. Soe, Jorn Borch (Danisco A/s, Den.). PCT Int. Appl. WO 2000005396 A1 20000203, 47 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-IB1354 19990720. PRIORITY: GB 1998-15905 19980721; GB 1998-24758 19981111.

AB The invention provides the use of a conversion agent, e.g. an enzyme, to prepare a good stuff comprising at least one functional ingredient from a food material, wherein the at least one functional ingredient has been generated from at least one constituent of the food material by the conversion agent. A fat blend containing soybean oil was treated with lipase obtained from *Aspergillus tubingensis*, dispersed in glycerol, for 12 h at 50°. The treated fat blend was then combined with water; skimmed milk powder, salt, ferment flavoring, soya lecithin,  $\beta$ -carotene, fat blend and butter flavoring to make a margarine.

L17 ANSWER 19 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1999:783901 Document No. 132:26672 Antiaging cosmetic composition containing a salt or a divalent metal complex. Bonte, Frederic; Dumas, Marc; Heusele, Catherine; Le Blay, Jacques (Guerlain S.A., Fr.; Le Blay, Jacques). PCT Int. Appl. WO 9962481 A1 19991209, 30 pp. DESIGNATED STATES: W: JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (French). CODEN: PIXXD2. APPLICATION: WO 1999-FR1261 19990528. PRIORITY: FR 1998-6822 19980529; US 1999-297679 19990506.

AB A cosmetic treatment method for fighting against skin aging effects is disclosed. The invention is characterized in that it consists in using at least one agent promoting the adherence of basal layer keratinocytes to

the dermal-epidermal junction, particularly to said junction's collagen IV such as in particular a salt or a divalent metal complex, preferably magnesium aspartate or magnesium chloride optionally associated with an agent stimulating collagen IV synthesis and/or an agent stimulating collagen VII synthesis. The invention is useful for preparing cosmetic compns. with anti-wrinkle activity. Efficacy of 1 mM magnesium chloride and 0.25 mM magnesium aspartate in promotion of adherence of human keratinocytes to the collagen type IV is shown. An antiwrinkle cream contained magnesium L-aspartate 0.3, *Potentilla erecta* 0.01, sodium hyaluronate 0.06, glycerol 5.15, *Centella asiatica* 0.1, vitamin A palmitate 0.1, vitamin E acetate 0.5, *Perilla* dry extract 0.5, excipients, fragrances, and preservatives q.s. 100 g.

L17 ANSWER 20 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1999:327769 Document No. 131:101501 Effect of drying time, bean depth and temperature on free amino acid, **peptide-N**, sugar and pyrazine concentrations of Malaysian **cocoa** beans. Hashim, Puziah; Selamat, Jinap; Muhammad, Kharidah; Ali, Asbi (Chemical and Industrial Biotechnology Laboratory, SIRIM Berhad, Shah Alam, 40911, Malay.). Journal of the Science of Food and Agriculture, 79(7), 987-994 (English) 1999. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB The effect of drying time on free amino acid, **peptide-N**, sugar and pyrazine concns. as well as the influence of bean depth and temperature on these compds. during **cocoa** drying was studied. Drying time, bean depth and temperature significantly decreased the concentration of free **amino acids**, **peptide-N**, total reducing sugars and sucrose and increased the concentration of trimethyl-, tetramethylpyrazine and total pyrazines in **cocoa** beans. The best drying treatment was obtained at the combination of bean depth/drying temperature of 8.3 cm/40°C. This was based on the fact that it produced significantly high concns. of hydrophobic free **amino acids**, **peptide-N** and total reducing sugars and significantly low concentration of trimethyl-, tetramethylpyrazine and total pyrazines. Drying treatment at 1.5 cm/60°C significantly produced the lowest concentration of free **amino acids**, **peptide-N** and total reducing sugars and the highest concentration of pyrazines.

L17 ANSWER 21 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1998:325742 Document No. 129:67080 Prediction of **peptides** in the fermented **cocoa** storage protein, with reference to the modeled 3D structure. O'Connor, Juli; Warwicker, James (Food Macromolecular Science Department, Reading Laboratory, Institute of Food Research, Reading, RG6 6BZ, UK). Journal of the Science of Food and Agriculture, 77(1), 109-114 (English) 1998. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB The amino acid sequence and a model for the 3D structure of the **cocoa** storage protein were combined with available data from protease digestions to aid understanding of factors that contribute to the characteristic **cocoa** aroma. Data reported for the free **amino acids** liberated during extensive digestions, modeling the fermentation process, are compared to computer predictions. Since good agreement is obtained between experiment and theory for the free **amino acids**, the modeling can be used to study properties not yet reported exptl. In particular, the **peptides** that remain after digestion are predicted, highlighting those sequences which may play important roles in the production of **cocoa** aroma. This approach could prove equally useful in understanding other such systems.

L17 ANSWER 22 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1997:100049 Document No. 126:196543 Isolation and molecular characterization of four arginine/glutamate rich polypeptides from the seeds of sponge gourd (*Luffa cylindrica*). Ishihara, Hisashi; Sasagawa, Takahiro; Sakai,

Ritsu; Nishikawa, Masateru; Kimura, Makoto; Funatsu, Gunki (Laboratory of Protein Chemistry and Engineering, Kyushu University, Fukuoka, 812-81, Japan). Bioscience, Biotechnology, and Biochemistry, 61(1), 168-170 (English) 1997. CODEN: BBBIEJ. ISSN: 0916-8451. Publisher: Japan Society for Bioscience, Biotechnology, and Agrochemistry.

- AB Four arginine/glutamate rich polypeptides referred to as 5k-, 6.5k-, 12.5k-, and 14k-AGRPs were purified to homogeneity by gel filtration on Sephadex G-75 followed by CM-cellulose, butyl-Toyopearl 650M, and reverse-phase HPLC from the seed of sponge gourd (*Luffa cylindrica*). Tricine SDS-PAGE indicated that 5k- and 6.5k-AGRPs are single polypeptides, but 12.5k- and 14k-AGRPs consist of two polypeptide chains, which are linked by disulfide bond(s). The N-terminal amino acid sequences of four AGRPs were analyzed by a gas-phase sequencer, and the result indicated that they are distinct mols. Comparison of the sequences with those of proteins in the protein database demonstrates that 5k- and 6.5k-AGRPs have a significant homol. with a basic **peptide** from pumpkin seeds and with **cocoa** seed vicilin, resp., and that 12.5k- and 14k-AGRPs are related to 2 S seed storage proteins. Furthermore, it was assumed that the four AGRPs might occur in the protein bodies within cells of the seed.

L17 ANSWER 23 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1997:97182 Document No. 126:103373 Proteinase treatment of **cocoa** to optimize flavor development. Hansen, Carl Erik; Klueppel, Anthony; Raetz, Eric (Societe Des Produits Nestle S.A., Switz.). Eur. Pat. Appl. EP 749694 A1 19961227, 11 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE. (French). CODEN: EPXXDW. APPLICATION: EP 1995-201668 19950620.

- AB **Cocoa** beans or liquors are treated with a proteinase in an aqueous medium at pH 3-8 until a level of 10  $\mu$ mol hydrophobic **amino acids**/g dry wt (and 1.4-fold the **peptide** level present in the fermented beans) is attained. The enzymic treatment is used to optimize precursors for flavor development.

L17 ANSWER 24 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1997:77185 Document No. 126:88557 **Cocoa** flavor precursor **peptides**, DNA encoding them, processes for producing the **peptides**, and their use for generating **cocoa** flavor. Rasmussen, Soeren; Bach, Mogens (Aarhus Oliefabrik A/S, Den.). PCT Int. Appl. WO 9638472 A1 19961205, 37 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-DK230 19960531. PRIORITY: DK 1995-616 19950601.

- AB **Cocoa** flavor precursor **peptides** comprising 2-11 amino acid residues, in particular the nonapeptide Ala-Pro-Leu-Ser-Pro-Gly-Asp-Val-Phe, are isolated and characterized from West African **cocoa** beans. A DNA sequence comprising the code of the **peptides** is synthesized, and this is inserted into replicable vectors. A recombinant host cell transformed with an expression vector containing one or more copies of the DNA sequence operably connected with control sequences which are recognized by the host cell, is cultivated to form the **peptides**, and these are isolated from the cultivation mixture. A **cocoa** flavor is produced by mixing one or more of the **peptides** with predominantly reducing saccharides and **amino acids** and roasting the mixture. The **cocoa** flavor may be added to food products, cosmetic products, or pharmaceutical products or may be formed in situ in these.

L17 ANSWER 25 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1995:810914 Document No. 123:248579 Nucleotide sequence of soybean stearyl-[acyl carrier protein] desaturase gene and genetic engineering of

stearic acid content in plant oils. Hitz, William D.; Yadav, Narendra S.; Perez-Grau, Luis (E. I. Du Pont de Nemours & Co., USA). U.S. US 5443974 A 19950822, 25 pp. Cont.-in-part of U.S. Ser. No. 529,049, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1992-995657 19921211. PRIORITY: US 1990-529049 19900525.

- AB The preparation and use of nucleic acid fragments encoding soybean seed stearyl-ACP desaturase enzyme or its precursor to modify plant oil composition are described. Chimeric genes incorporating such nucleic acid fragments and suitable regulatory sequences may be utilized to transform plants to control the levels of saturated and unsatd. fatty acids. Thus, based on the N-terminal sequence of purified soybean stearyl-ACP desaturase, degenerate 35-mer oligonucleotides were designed for use as hybridization probes and cloning of soybean seed cDNA. The cDNA sequence contains an open reading frame for 391 **amino acids** that includes an N-terminal, 32-amino-acid, transit **peptide** for precursor import into the chloroplast. In vitro recombinant DNA techniques were used to make fusion proteins of glutathione S-transferase or  $\beta$ -galactosidase with the 38-kDa desaturase precursor protein at amino acid -10 or +10 from the N-terminus of the mature enzyme. The effect of overexpression of soybean mature stearyl-ACP desaturase in somatic soybean embryos was studied by introducing a 35S-gliadin promoter/sense mature stearyl-ACP desaturase chimeric gene. There was an up to 10-fold increase in 18:0 level in mature transgenic somatic embryos in comparison to untransformed embryos.

L17 ANSWER 26 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1995:691945 Document No. 123:82070 Specificity and stability of the carboxypeptidase activity in ripe, ungerminated seeds of Theobroma cacao L. Bytof, G.; Biehl, B.; Heinrichs, H.; Voigt, J. (Botanisches Inst., Technische Univ. Braunschweig, Braunschweig, D-38092, Germany). Food Chemistry, 54(1), 15-21 (English) 1995. CODEN: FOCHDJ. ISSN: 0308-8146. Publisher: Elsevier.

- AB The carboxypeptidase activity present in ripe, ungerminated Theobroma cacao seeds is involved in the proteolytic formation of the **cocoa**-specific aroma precursors. A study was made of the specificity of this particular enzyme activity using crude homogenates of acetone dry powder prepared from unfermented, ripe **cocoa** seeds. Both oligopeptide mixts. derived from **cocoa** seed proteins and synthetic **peptides** were found to be suitable substrates for this enzyme activity. However, **peptides** with carboxyterminal arginine, lysine or proline residues are resistant against degradation by the **cocoa** seed carboxypeptidase. The enzyme preferentially liberates hydrophobic **amino acids**, whereas acidic **amino acids** are released very slowly. The rate of hydrolysis is not only determined by the carboxyterminal, but also affected by the neighboring amino acid residue. Furthermore, the specificity of the enzyme is influenced by the pH-value. The specificity of the **cocoa** seed carboxypeptidase activity is remarkably similar to the specificity of carboxypeptidase A from porcine pancreas which (in addition to the **cocoa** aspartic endoprotease) has recently been successfully used for the in vitro formation of the **cocoa**-specific aroma precursors. These results are discussed in the light of the pH-dependent generation of the **cocoa**-specific aroma precursors during fermentation of the **cocoa** seeds.

L17 ANSWER 27 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1995:92951 Document No. 123:26630 Cloning and sequencing of a gene encoding a 21 kDa trypsin inhibitor from Theobroma cacao L.. Dodo, H. W.; Furtek, D. B. (Department Food Science, Alabama and M University, Normal, AL, 35762, USA). Cafe, Cacao, The, 38(2), 113-18 (English) 1994. CODEN: CACAAY. ISSN: 0007-9510.

- AB A **cocoa** library was constructed in a bacteriophage LambdaGem-11 vector and screened with the protein-coding region of a **cocoa** trypsin inhibitor cDNA. Fourteen of 20,000 clones screened were pos. One

pos. clone was purified, subcloned into a pBluescript phagemid vector, and sequenced. Sequence anal. revealed a single open reading frame starting with an AUG initiation codon and ending with a TAA termination codon. The predicted encoded protein was 221 **amino acids** long and included a 26 amino acid signal **peptide**. The 5' noncoding region had a putative TATA box, TATAAAT, at position -65, and an AGGA box, AAAAGAA, at position -117 with respect to the initiation codon. The 3' noncoding region revealed two putative polyadenylation signals, AATAAA, 66 and 194 base pairs down-stream from the first termination codon, TAA. The genomic clone contained no introns, and Southern blot anal. showed it to be a member of a multigene family.

L17 ANSWER 28 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1994:578304 Document No. 121:178304 The proteolytic formation of essential **cocoa**-specific aroma precursors depends on particular chemical structures of the vicilin-class globulin of the **cocoa** seeds lacking in the globular storage proteins of coconuts, hazelnuts and sunflower seeds. Voigt, J.; Wrann, D.; Heinrichs, H.; Biehl, B. (Botanisches Institut, Technische Universitaet Braunschweig, Braunschweig, D-38092, Germany). Food Chemistry, 51(2), 197-205 (English) 1994. CODEN: FOCHDJ. ISSN: 0308-8146.

AB **Cocoa**-specific aroma precursors were generated in vitro, when the vicilin-class globulin of **cocoa** seeds was successively degraded by the aspartic endoprotease and the carboxypeptidase isolated from ungerminated **cocoa** seeds. To study the significance of the chemical structure of the protein substrate, globular storage proteins were isolated from different crops and subjected to proteolysis by the aspartic endoprotease and the carboxypeptidase of ungerminated **cocoa** seeds. The obtained proteolysis products were comparatively analyzed for their patterns of oligopeptides and free **amino acids** and were toasted in the presence of reducing sugars and deodorized **cocoa** butter. Sensory evaluation of the roasting aromas revealed that neither the proteolysis products of the legumin-class globulins from hazelnuts or sunflower seeds, nor those derived from the vicilin-class globulin of coconuts contained the typical pattern of aroma precursors formed by degradation of the vicilin-class globulin of **cocoa** seeds with the same proteases. Considerable differences were observed between the patterns of free **amino acids** and oligopeptides generated by proteolysis of the **cocoa** vicilin and of the globular storage proteins from the other crops. These findings indicate that the formation of the **cocoa**-specific aroma precursors is determined by the particular chemical structure of the vicilin-class globulin present in the **cocoa** seeds.

L17 ANSWER 29 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1994:433595 Document No. 121:33595 **Cocoa**-specific aroma precursors are generated by proteolytic digestion of the vicilin-like globulin of **cocoa** seeds. Voigt, J.; Heinrichs, H.; Voigt, G.; Biehl, B. (Bot. Inst., Tech. Univ. Braunschweig, Braunschweig, D-38092, Germany). Food Chemistry, 50(2), 177-84 (English) 1994. CODEN: FOCHDJ. ISSN: 0308-8146.

AB The proteolytic formation of the **cocoa**-specific aroma precursors was investigated in vitro using protein substrates and proteases purified from ungerminated **cocoa** seeds. An aspartic endoprotease and a carboxypeptidase present in ungerminated **cocoa** seeds were required for this process. **Cocoa**-specific aroma precursors were obtained by proteolytic digestion of the vicilin-like globulin but not by proteolysis of the albumin of **cocoa** seeds.

L17 ANSWER 30 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1994:433589 Document No. 121:33589 Proteolytic formation of **cocoa** flavor precursors. Voigt, J.; Biehl, B.; Heinrichs, H. (Bot. Inst. der Tech., Univ. Braunschweig, Braunschweig, 3300, Germany). Prog. Flavour Precursor Stud. Proc. Int. Conf., Meeting Date 1992, 213-16. Editor(s): Schreier, Peter; Winterhalter, Peter. Allured: Carol Stream, Ill. .

(English) 1993. CODEN: 59YYAE.

- AB **Cocoa**-specific flavor precursors were generated during autolysis at pH 5.2 of acetone dry powder prepared from unfermented **cocoa** seeds. Hydrophobic free **amino acids** and hydrophilic **peptides** were preferentially formed under these conditions. At pH 3.5, no **cocoa**-specific flavor precursors were obtained and no **amino acids** were liberated. The mixture of hydrophobic **peptides** generated during autolysis of acetone dry powder at pH 3.5 was transformed to hydrophilic **peptides** and hydrophobic free **amino acids** by digestion with carboxypeptidase A from porcine pancreas. This mixture of hydrophilic **peptides** and hydrophobic free **amino acids** revealed **cocoa**-specific aroma after roasting in the presence of reducing sugars. When these flavor precursors were substituted by a synthetic mixture of free **amino acids** adapted to the spectrum of free **amino acids** in fermented **cocoa** seeds, only one out of 17 testers was able to recognize **cocoa** flavor. The authors conclude that hydrophilic **peptides** formed by successive digestion of a seed protein by an endoprotease and a carboxypeptidase are **cocoa**-specific aroma precursors.

L17 ANSWER 31 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1994:210996 Document No. 120:210996 Conformational study of a salivary proline-rich protein repeat sequence. Murray, Nicola J.; Williamson, Michael P. (Krebs Inst. Biomol. Res., Univ. Sheffield, UK). European Journal of Biochemistry, 219(3), 915-21 (English) 1994. CODEN: EJBCAI. ISSN: 0014-2956.

- AB Salivary proline-rich proteins have a repetitive primary structure particularly rich in the **amino acids** proline, glutamine and glycine. One of the biol. roles of these proteins is to bind and precipitate polyphenols (vegetable tannins) present in the diet (e.g. tea, coffee, fruit, **chocolate**) neutralizing their harmful actions which include nutritional loss, inhibition of gut enzymes and esophageal cancer. Two **peptides** overlapping in sequence, corresponding to the mouse salivary proline-rich protein MP5 repeat sequence: QGPPPPQGGPQQRRPPQPGNQ and GPQQRRPPQPGNQQGPPPPQGGPQ have been synthesized and studied in H<sub>2</sub>O/(2H<sub>6</sub>)dimethyl sulfoxide (9:1, by volume) using 1H-NMR spectroscopy. Low-temperature far-UV CD spectroscopy and NMR conformational parameters indicate that the **peptides** adopt an extended random coil conformation in solution. There is no evidence for a defined polyproline type II helix in the **peptides**, despite the high proline content. NMR data show that the trans-proline isomer predominates to at least 90%.

L17 ANSWER 32 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1994:29694 Document No. 120:29694 In-vitro formation of **cocoa**-specific aroma precursors: aroma-related **peptides** generated from **cocoa**-seed protein by co-operation of an aspartic endoprotease and a carboxypeptidase. Voigt, J.; Biehl, B.; Heinrichs, H.; Kamaruddin, S.; Marsoner, G. Gaim; Hugi, A. (Bot. Inst., Tech. Univ. Braunschweig, Braunschweig, W-38092, Germany). Food Chemistry, 49(2), 173-80 (English) 1993. CODEN: FOCHDJ. ISSN: 0308-8146.

- AB **Cocoa**-specific aroma precursors were obtained when acetone-dry powder prepared from unfermented **cocoa** seeds was subjected to autolysis at pH 5.2. Hydrophobic free **amino acids** and hydrophilic **peptides** were preferentially generated under these conditions. When this mixture of proteolysis products was formulated and roasted in the presence of reducing sugars, **cocoa** and/or **chocolate** aroma was detected by 2 independent panels. Aroma precursors extracted and partially purified from fermented **cocoa** seeds also consisted predominantly of hydrophilic **peptides** and hydrophobic free **amino acids**. No **cocoa**-specific aroma precursors were obtained when the acetone-dry powder from unfermented **cocoa** seeds was incubated at pH 3.5. Few free



**amino acids** were released under these conditions, but a large number of hydrophobic **peptides** were formed. When these hydrophobic **peptides** were digested with carboxypeptidase A from porcine pancreas, mixts. of hydrophilic **peptides** and hydrophobic free **amino acids** were generated, which were shown to contain **cocoa**-specific aroma precursors. No typical **cocoa** aroma was, however, obtained when synthetic mixts. of **amino acids** adapted to the spectrum of free **amino acids** present in fermented **cocoa** seeds (or aroma-precursor exts.) were roasted in the presence of reducing sugars. The findings therefore indicate that the essential **cocoa**-specific aroma precursors are among the hydrophilic oligopeptides. Ungerminated **cocoa** seeds contain one predominant endoprotease (an aspartic endoprotease with a pH optimum at pH 3.5) and a carboxypeptidase activity (pH optimum: 5.8). The findings indicate that the cooperative action of these 2 enzymes on **cocoa**-seed protein is required for the generation of the **cocoa**-specific aroma precursors.

L17 ANSWER 33 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1993:186041 Document No. 118:186041 Cloning and sequencing of a cDNA encoding the major storage proteins of Theobroma cacao. Identification of the proteins as members of the vicilin class of storage proteins. Spencer, Margaret E.; Hodge, Rachel (Plant Sci. Ltd., Sheffield, S10 2TN, UK). Planta, 186(4), 567-76 (English) 1992. CODEN: PLANAB. ISSN: 0032-0935.

AB The major storage proteins, polypeptides of 31 and 47 kDa, from the seeds of **cocoa** (Theobroma cacao L.), have been identified and partially purified by preparative gel electrophoresis. The polypeptides were both N-terminally blocked, but some N-terminal amino-acid sequence was obtained from a cyanogen bromide **peptide** common to both polypeptides, permitting the construction of an oligonucleotide probe. This probe was used to isolate the corresponding cDNA clone from a library made from poly(A)+ RNA from immature **cocoa** beans. The cDNA sequence has a single major open reading frame that translates to give a 566-amino acid polypeptide of Mr 65,612. The existence of a common precursor to the 31- and 47-kDa polypeptides of this size was confirmed by immunopptn. from total poly(A)+ RNA translation products. The precursor has an N-terminal hydrophobic sequence which appears to be a typical signal sequence, with a predicted site of cleavage 20 **amino acids** after the start. This is followed by a very hydrophilic domain of approx. 110 **amino acids**, which, by analogy with the cottonseed  $\alpha$ -globin, is presumed to be cleaved to leave a domain of approx. 47 kDa, very close to the observed size of the mature polypeptide. Like the hydrophilic domain of the cottonseed  $\alpha$ -globin, the **cocoa** hydrophilic domain is very rich in glutamine and charged residues (especially glutamate), and contains several Cys-X-X-X-Cys motifs. The cyanogen bromide **peptide** common to the 47-kDa and 31-kDa polypeptides is very close to the proposed start of the mature domain, indicating that the 31-kDa polypeptide arises via further C-terminal processing. The polypeptide sequence is homologous to sequences of the vicilin class of storage proteins, previously found only in legumes and cotton. Most of these proteins have a mature polypeptide size of approx. 47 kDa, and are synthesized as precursors only slightly larger than this. Some, however, are larger polypeptides (e.g.  $\alpha$ -conglycinin from soybean is 72 kDa), usually due to an addnl. N-terminal domain. In cottonseed, the situation appears to parallel that in **cocoa** in that the vicilin is synthesized as an approx. 70-kDa precursor and then processed to a 47-kDa (and in the case of **cocoa** also to a 31-kDa) mature protein. In this context, it is interesting that cotton is closer in evolutionary terms to **cocoa** than are the legumes, both cotton and **cocoa** being in the order Malvales.

L17 ANSWER 34 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1992:421504 Document No. 117:21504 Cloning and expression of a cDNAs for a precursor of 47- and 31-kilodalton **cocoa** proteins. Spencer, Margaret Elizabeth; Hodge, Rachel; Deakin, Edward Alfred; Ashton, Sean (Mars G. B. Ltd., UK). PCT Int. Appl. WO 9119801 A1 19911226, 59 pp. DESIGNATED STATES: W: AU, BR, CA, FI, GB, HU, JP, KR, NO, PL, RO, SU, US; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1991-GB914 19910607. PRIORITY: GB 1990-13016 19900611.

AB A cDNA encoding a 67-kDa protein that is the precursor of the 47- and 31-kDa major seed proteins of **cocoa** (*Theobroma cacao*), is cloned and expressed. The 47- and 31-kDa proteins were purified and used for prepare antibodies to identify the 67-kDa precursor. The 9 N-terminal **amino acids** of their CNBr-cleaved derivs., the 24- and 17-kDa **peptides**, were used for synthesizing oligonucleotide probes. The cDNA for the 67-kDa protein was obtained by screening the cDNA library of immature **cocoa** beans prepared in the 3'-oligo(dG)-tailed pUC9. Seven expression plasmids for the 67kDa protein were prepared and the expression of the cDNA in *Escherichia coli* or *Saccharomyces cerevisiae* was demonstrated.

L17 ANSWER 35 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1991:184062 Document No. 114:184062 Aromagrams of off-flavors. Ney, K. H. (Hamburg, Germany). Gordian, 90(11), 216-18 (German) 1990. CODEN: GORDAM. ISSN: 0017-2243.

AB Aromagrams are applied for the description of off-flavors. In the case of inner and outer off-flavors, the off-components are mentioned with name and formula and hatching of the areas of importance is drawn at a right angle to the usual hatching, thus the off-flavors are also marked optically. Describing off-flavors due to imbalances, where no new compds. occur, but the concentration of component(s) usually present exceeds a certain limit, a denser hatching represents this fact. In this case there is also an optical representation of the off-flavor, differentiated clearly on the other hand from the picture of inner and outer off-flavors. Examples of **cocoa** and Cheddar cheese off-flavors demonstrate the value of the new presentation. The influence of imbalance off-flavors is discussed, stressing the need for more quant. flavor anal.

L17 ANSWER 36 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1991:178931 Document No. 114:178931 Differential feeding responses evoked in the rat by NPY and NPY1-27 injected intracerebroventricularly. Paez, Ximena; Nyce, J. W.; Myers, R. D. (Sch. Med., East Carolina Univ., Greenville, NC, 27858, USA). Pharmacology, Biochemistry and Behavior, 38(2), 379-84 (English) 1991. CODEN: PBBHAU. ISSN: 0091-3057.

AB Neuropeptide Y (NPY) given by the intracerebroventricular (ICV) route in the rat evokes hyperphagic-like feeding. To exam. the mol. nature of action of NPY, comparisons were made between the central effects of this **peptide** and a newly synthesized amino-terminus fragment, NPY1-27. A single guide tube was implanted stereotaxically to rest just above a lateral cerebral ventricle so that ICV injection in a volume of 10  $\mu$ L of either CSF control vehicle or **peptide** could be given in the unrestrained rat. Native NPY or NPY1-27 was given in doses of 5.0 or 10.0  $\mu$ g, whereas nondeprotected NPY was infused in a dose of 10.0  $\mu$ g. The intakes of either regular com. rat diet or specially prepared **chocolate**-flavored biscuits as well as water were recorded intermittently for 4.0 h following each ICV infusion. Although a clear-cut dose response with a latency of similar magnitude emerged for both mols., NPY was found to be nearly twice as potent as NPY1-27 in inducing spontaneous feeding. A corresponding infusion in the same volume of either nondeprotected NPY or CSF control vehicle was without effect. When **chocolate**-flavor biscuits were provided to the rat, an ICV infusion of a 10.0  $\mu$ g dose of NPY enhanced significantly both rate of eating and total cumulative intake of flavored food in comparison to that after a similar infusion of NPY1-27 or either control solution. Apparently, native NPY acting centrally affects gustatory and/or olfactory systems to

a much greater degree than does NPY1-27. Consequently, the carboxy terminus **amino acids** 28-36 appear to be essential in shifting the sensory threshold for food ingested by the rat and thus may govern the overall magnitude of its intake.

L17 ANSWER 37 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1990:97132 Document No. 112:97132 Heat-induced flavor formation from **peptides**. Rizzi, George P. (Miami Val. Lab., Procter and Gamble Co., Cincinnati, OH, 45239-8707, USA). ACS Symposium Series, Volume Date 1988, 409(Therm. Gener. Aromas), 172-81 (English) 1989. CODEN: ACSMC8. ISSN: 0097-6156.

AB **Peptides** can degrade during food processing to form novel taste compds., such as diketopiperazines (DKPs), or react with reducing sugars to produce volatile Maillard products. Eleven DKPs were detected in com. cocoas and model studies substantiated a DKP formation mechanism involving intramol. cyclization of linear **peptide** precursors. Model Maillard reactions of **peptides** and fructose generated Strecker degradation products from **amino acids** with blocked amine and carboxyl functionalities.

L17 ANSWER 38 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1990:6436 Document No. 112:6436 Enrichment of leucine, alanine, phenylalanine, and tyrosine in the free **amino acids** of fermented **cocoa**. Biehl, B.; Kirchoff, P. M.; Ziegler-Berghausen, H. (Bot. Inst., Tech. Univ. Braunschweig, Braunschweig, Fed. Rep. Ger.). GBF Monograph Series, Volume Date 1988, 11(Enzyme Lebensmitteltechnol.), 91-6 (German) 1989. CODEN: GMSEDJ. ISSN: 0930-4312.

AB The free amino acid composition of fermented **cocoa** beans and of **cocoa** seeds after fermentation-like incubations was determined by HPLC. Leucine, alanine, phenylalanine, and tyrosine predominate by far. The total seed protein consists of significantly less of these 4 hydrophobic **amino acids** and contains more of the acidic **amino acids**. Three explanations are given which are supported by preliminary results: (1) the vacuolar storage protein which is hydrolyzed during fermentation is enriched in these hydrophobic **amino acids**, (2) free acidic **amino acids** are metabolized in the seed before the onset of postmortem proteolysis, and (3) **cocoa** seed endopeptidases are aspartic acid proteinases. This type of enzyme gives rise to **peptides** with hydrophobic **amino acids** in the terminal positions, which are the first to be attacked by exopeptidases. Free **amino acids** are significant in **cocoa** aroma formation in roasting.

L17 ANSWER 39 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1986:532566 Document No. 105:132566 Protein-containing preparation for use in making confectionery. Szydlowski, Antoni; Hendzlik-Sztajnert, Elzbieta; Rachaus, Zbigniew (Centralny Ośrodek Badań i Rozwoju Przemysłu Gastronomicznego i Artykułów Spożywczych, Pol.). Pol. PL 127363 B1 19850930, 4 pp. (Polish). CODEN: POXXA7. APPLICATION: PL 1979-221894 19791231.

AB Animal proteins (dry substance 5-99%) are subjected to controlled dehydration in a fluidized-bed drying apparatus at  $\leq 56^\circ$  until the dry substance is 85-99% and then are subjected to disintegration by acidic, enzymic, and/or mech. hydrolysis. Thus, 48 kg protein concentrate prepared from fish and/or sea organisms and containing protein 24, fat 0.5, and water 0.3% was subjected to controlled dehydration for 1 h in a fluidized-bed drier at  $\leq 56^\circ$ . The resulting 10 kg protein granules contained 0.5% fat and 1.5% water. The protein was disintegrated in a colloidal mill and/or by hydrolysis with an oxalate solution. The product contained 70% **peptides** and 30% free **amino acids**. The product 25 was mixed with sugar fat 24 at  $56^\circ$  and mixed with milk powder 22 and sugar powder 21 g. The mixture was shaped and coated with **chocolate**.

L17 ANSWER 40 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1986:512769 Document No. 105:112769 **Cocoa** flavor - bitter compounds as its essential taste components. Ney, K. H. (Hamburg, D-2000/54, Fed. Rep. Ger.). Gordian, 86(5), 84, 86, 88 (German) 1986. CODEN: GORDAM. ISSN: 0017-2243.

AB Theobromine and diketopiperazines apparently act synergistically to produce the bitter taste of **cocoa**. The bitter taste of theobromine was pH dependent, the sensitivity being increased around pH 5 compared to higher pH values. Diketopiperazines, which are formed by cyclization of 2 **amino acids**, had a degree of bitterness which followed the Q rule developed previously for **amino acids**, **peptides**, and proteins (Ng, K. H., 1972). Q is the sum of contributions of individual **amino acids** to the free energy of unfolding of the **peptide** (or diketopiperazine) divided by the number of amino acid residues. The value of Q. >1350 correlates with a bitter taste for **peptides** <6000 mol. weight, but not for **peptides** >6000 mol. weight. The following compds. had the best (strongest) bitter taste among the diketopiperazines tested: cyclo(Phe-Ala), cyclo(Phe-Leu), cyclo(Phe-Val), and cyclo(Phe-Phe). The range of Q values for these compds. was 1690-2650. Previous data on the bitterness of **peptides** in relation to structure and the formulation of the Q rule are given.

L17 ANSWER 41 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1985:559396 Document No. 103:159396 Acidification, proteolysis and flavor potential in fermenting **cocoa** beans. Biehl, Boele; Brunner, Ernst; Passern, Detlef; Quesnel, Victor C.; Adomako, Daniel (Bot. Inst., Tech. Univ. Carolo-Wilhelmina, Braunschweig, Fed. Rep. Ger.). Journal of the Science of Food and Agriculture, 36(7), 583-98 (English) 1985. CODEN: JSFAAE. ISSN: 0022-5142.

AB **Cocoa** ferms. in Ghana and Trinidad as well as anaerobic fermentation-like incubations of fresh **cocoa** beans in Germany were carried out under controlled conditions. Samples of beans were taken during the course of these treatments and detns. were made as to acidification (pH, HOAc content), proteolysis (free  $\alpha$ -amino N, **peptide** N and SDS electrophoresis of the protein **peptides**) and flavor potential (gas chromatog. of the highly volatile compds., in particular isopentanal [590-86-3] and organoleptic anal. after thin layer roasting). A pos. correlation between acidification, proteolysis and the development of flavor potential during anaerobic fermentation can be demonstrated in principle. However, the flavor potential is increased if the temperature rise is comparatively slow in both normal fermentation and laboratory incubation. Strong acidification and high accumulation of **amino acids** and **peptides** were not essential for a good flavor potential. The isopentanal content was a useful indicator of the progress of normal fermentation in the tropics. These findings can be interpreted on the basis of earlier results about germination-like processes in the protein vacuoles, pre- and post-mortem subcellular structures and the special characteristics of HOAc diffusion. Conclusions which are relevant to the practice of **cocoa** fermentation are discussed in more detail.

L17 ANSWER 42 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1985:503763 Document No. 103:103763 **Cocoa** and(or) coffee substitutes. (Ajinomoto Co., Inc., Japan). Jpn. Kokai Tokkyo Koho JP 60049751 A2 19850319 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-157511 19830829.

AB A composition containing **cocoa** and (or) coffee flavor and one or more of the bitter **amino acids** (e.g., isoleucine, leucine, lysine, methionine, phenylalanine, tryptophan, valine, arginine, histidine, citruline, ornithine, and proline) and **peptides** is a **cocoa** and (or) coffee substitute and also an amino acid supplement

health drink.

L17 ANSWER 43 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1976:150973 Document No. 84:150973 I. Site of decomposition of methyl bromide in **cocoa** beans. II. Field desorption mass spectrometry of **amino acids** and **peptides**. Asante-Poku, Stephen (Univ. Windsor, Windsor, ON, Can.). No pp. Given Avail. Natl. Libr. Canada, Ottawa, Ont From: Diss. Abstr. Int. B 1976, 36(9), 4476 (English) 1975.

AB Unavailable

L17 ANSWER 44 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1976:134238 Document No. 84:134238 Specificity of **cocoa** aroma. Mohr, W.; Landschreiber, E.; Severin, T. (Inst. Lebensmitteltechnol. Verpack., Univ. Muenchen, Munich, Fed. Rep. Ger.). Fette, Seifen, Anstrichmittel, 78(2), 88-95 (German) 1976. CODEN: FSASAX. ISSN: 0015-038X.

AB Substances extracted from **cocoa** beans (fermented and unfermented) and also model systems consisting of known compds. (sugars, **amino acids**, organic and inorg. acids, alkaloids, and inorg. salts) were roasted and the resulting aromas were compared sensorily to those of roasted beans. Especially crucial for aroma formation were a group of **cocoa** bean **peptides**, which were isolated and analyzed for the amino acid content.

L17 ANSWER 45 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1972:2699 Document No. 76:2699 Formation of **cocoa** aroma from its precursors. Mohr, W.; Roehrl, M.; Severin, Th. (Inst. Lebensmitteltechnol. Verpack., Munich, Fed. Rep. Ger.). Fette, Seifen, Anstrichmittel, 73(8), 515-21 (German) 1971. CODEN: FSASAX. ISSN: 0015-038X.

AB The isolation and chemical composition of a highly purified mixture of aroma precursors from raw **cocoa** were extensively studied and the alterations due to heating at roasting temps. were followed quant. **Cocoa** aroma was formed in the course of a Maillard reaction between **amino acids** and reducing sugars. Participation of oligopeptides in the alterations that were specific for the roasting were detected for the first time. From the high-boiling components present in the product, a fraction having the typical **cocoa** flavor could be isolated and resolved by gas chromatog.

L17 ANSWER 46 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1971:418988 Document No. 75:18988 Assessment of some claims relating to the production and composition of **chocolate** aroma. Lopez, Alexander; Quesnel, Victor C. (Cocoa Res. Unit, Univ. West Indies, St. Augustine, Trinidad/Tobago). Revue Internationale de la Chokolaterie, 26(1), 19-20, 22-4 (English) 1971. CODEN: RCHOA8. ISSN: 0035-3345.

AB By mixing different compds. expts. were made to identify substances responsible for **chocolate** flavor and to compound an artificial **chocolate** aroma. Testing for type of flavor of the aqueous or alc. solns. was made by smelling or tasting. Heated mixts. of reducing substances and **amino acids** or **peptides** gave odors which resembled some foods but not **chocolate**. A synthetic **chocolate** flavor was produced containing isovaleraldehyde dimethyl disulfide, acetophenone, pyrazine mixture, phenylacetaldehyde, guaiacol, maltol, pyruvic acid, furfural, pyrrole, and acetic acid.

L17 ANSWER 47 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1971:404241 Document No. 75:4241 Effect on the curing of fresh cacao beans by vacuum infiltration of certain substances. Purr, Arnulf; Helfenberger, Andre (Inst. Food Technol. Pack., Munich, Fed. Rep. Ger.). Revue Internationale de la Chokolaterie, 26(2), 30-8 (English) 1971. CODEN: RCHOA8. ISSN: 0035-3345.

AB Substances (Cu acetate, protein, **peptides**, **amino**

acids, and pectin-splitting enzymes) were infiltrated into cacao beans by vacuum infiltration at 50° for 24 hr at 100% relative humidity, and by vacuum infiltration and curing in a modified Rohan tray. Upon death of the beans, the cell contents diffused and reacted with the infiltrated substances during the shortened curing period. This process required 1 day longer than the normal curing process.

L17 ANSWER 48 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1970:101115 Document No. 72:101115 Hypotensive L-leucyl-1-leucyl-1-leucyl tetrapeptides. (Tanabe Seiyaku Co., Ltd.). Brit. GB 1175014 19691223, 4 pp. (English). CODEN: BRXXAA. PRIORITY: JP 19670913.

AB In this abstract, **amino acids** are of the L-configuration; Cbzo = benzyloxycarbonyl. The title tetrapeptides, useful as hypotensive and nutritive agents, and as intermediates, were prepared by standard procedures. Thus, a mixture of 25 g Cbzo-Leu, 150 ml THF, and 9.54 g Et3N at -20° was treated dropwise with 10.2 g ClCO2Et, stirred 15 min, a mixture of 20.5 g Phe-OMe.HCl, 200 ml THF, and 9.54 g Et3N added dropwise, and the whole stirred 2.5 hr to give 28 g Cbzo-Leu-Phe-OMe (I), m. 84.5-87°, [α]21D -27° (c 1, MeOH). Hydrogenation of 19.2 g I in a mixture of 30 ml 42% HCl in MeOH, 200 ml MeOH, and 50 ml AcOH over 2.2 g 10% Pd-C gave 11.05 g Leu-Phe-OMe.HCl (II), m. 193-5°, [α]21D 13.3° (c 1, MeOH). A mixture of 5.5 g CbzONH-Leu-Leu-CONHNH2, 25 ml dioxane, 70 ml THF, and 9.4 ml 4.5N HCl in dioxane was treated with 1.07 g NaNO2 in 2.5 ml H2O at -14 to -18°, the mixture stirred 20 min, 4.6 g Et3N added at -35 to -38°, the mixture stirred 15 min, a mixture of 4.61 g II, 2.84 g Et3N, and 40 ml Me2NCHO (DMF) added, and the whole stirred 1 hr at -20°, 1 hr at -10°, and 19 hr at room temperature gave 8.03 g Cbzo-Leu-Leu-Leu-Phe-OMe (III), m. 187-8° (MeOH), [α]20D -54.2° (c 1, DMF). Catalytic hydrogenation of 3.26 g III gave 2.09 g Leu-Leu-Leu-Phe-OMe.HCl, m. 215° (Me2CO-Hexane), [α]20D -13.3° (c 1, DMF), which with N NaOH gave Leu-Leu-Leu-Phe. By similarly methods were prepared Leu-Tyr-OMe.HCl, amorphous, [α]23D 9.33° (c 1, MeOH); Cbzo-Leu-Leu-Leu-Tyr-OMe, m. 198-200° (MeOH), [α]25D -55.6° (c 1, MeOH); Leu-Leu-Leu-Tyr-OMe.HCl, m. 234° (decomposition), [α]25D -24.3° (c 1, MeOH); Leu-Leu-Leu-Tyr; Cbzo-Leu-Leu-Phe-OMe, m. 150-1°, and Leu-Leu-Phe-OMe.HBr. Compns. for oral use containing the tetrapeptides include tablets, **chocolate**, and drinks.

L17 ANSWER 49 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1967:402255 Document No. 67:2255 Hydrolysis of proteins during **cocoa** fermentation in relation to their interaction with polyphenols under anaerobic and aerobic conditions. Biehl, Boele (Tierarztl. Hochsch., Hannover, Fed. Rep. Ger.). Zeitschrift fuer Lebensmittel-Untersuchung und -Forschung, 133(3), 145-58 (German) 1967. CODEN: ZLUFAR. ISSN: 0044-3026.

AB Freeze-dried and Me2CO-dried, powdered, unfermented **cocoa** seeds were aerobically and anaerobically fermented and analyzed for total N, water-soluble N, and water-soluble α-amino N compds., and amino acid composition of the HCl hydrolyzates. In the aerobic 1st phase of fermentation, **cocoa** proteins are hydrolyzed and become more soluble. In the 2nd phase, in the presence of the polyphenols, the **peptides** and **amino acids** react with the polyphenols (quinone tanning reaction) in the presence of O. This tanning action during fermentation, which reduces the amount of α-amino N compds. in the HCl hydrolyzate, is related to O uptake. After a chemical reaction between free α-amino N materials and oxidized polyphenols, the free α-amino N compds. are not determinable in the HCl hydrolyzates. The reduction of water-soluble α-amino N compds. on fermentation in air is due to the oxidative action of free **amino acids** or **peptides** with polyphenols. 65 references.

L17 ANSWER 50 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1965:18420 Document No. 62:18420 Original Reference No. 62:3327g-h,3328a  
Enzymic changes in **cocoa** beans during curing. I. Purr, Arnulf;  
Springer, Rudolf; Morcinek, Hartmut (Inst. Lebensmitteltechnol., Munich,  
Germany). Rev. Intern. Chocolat., 19(9), 398-400 (German) 1964.

AB Studies were done with peeled, viable, and partly germinated beans,  
fermented at 30°. Polyphenoloxidase activity in nongerminated  
beans and in germinating seeds varied with the type of bean used. Addition  
of individual **amino acids** and **peptides**,  
following the quinone stage, increased O consumption slightly. The  
presence of L-proline and addition of the proteolysis products increased O  
consumption greatly, again depending on bean types. Glycylglycine  
increased O intake the most, while DL-leucylglycine had no effect.  
Glycine was most active in promoting O intake, followed by DL-threonine,  
DL-serine, L-alanine, and L-lysine. D-Arginine, L-glutamic acid, and  
L-leucine were inactive. 15 references.

L17 ANSWER 51 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1964:84453 Document No. 60:84453 Original Reference No. 60:14830e-h Enzymic  
process in cacao beans during fermenting, with special regard to the  
possibilities of aroma formation. III. Occurrence and significance of  
polyphenoloxidase, catalase, peroxidase,  $\alpha$ -decarboxylase, and of  
coenzyme A in resting and germinating beans. Purr, Arnulf; Morcinek,  
Hartmut; Springer, Rudolf (Univ. Munich, Germany). Zeitschrift fuer  
Lebensmittel-Untersuchung und -Forschung, 123(5), 341-54 (Unavailable)  
1963. CODEN: ZLUFAR. ISSN: 0044-3026.

AB cf. CA 60, 11291a. Various enzymes as indicated in the subtitle were  
determined in resting and germinating Ghana, Costa Rica, and Bahia cacao beans.  
The effects of pH, inhibitors, and individual **amino  
acids** on activities were also determined. Polyphenolase activity  
differed with the source of the beans and increased during germination.  
Presence of **amino acids** and **peptides** with  
pyrocatechol permitted small increases in O uptake. Marked high O uptake  
occurred with L-proline and protein split products. Among **amino  
acids**, presence of glycine induced highest O uptake; this was  
followed by DL-threonine, DL-serine, L-alanine, and L-lysine; while  
D-arginine, L-glutamic acid, and L-leucine had no influence. Among  
**peptides** glycyl-DL-leucine had the strongest influence, whereas  
DL-leucylglycine had no effect on O uptake. Detection of  
 $\alpha$ -decarboxylase (pyruvate decarboxylase) (I) was with use of pyruvic  
acid,  $\alpha$ -ketoglutaric acid, and glutamic acids as substrates.  
L-Asparagic acid and DL-alanine activated the reaction and increased CO<sub>2</sub>  
formation. The I is able to form oxalic acid among other products of the  
glyoxylic acid cycle, which in turn is the starting material for formation  
of acetoin and diacetyl. During germination, hydrolases,  
polyphenoloxidase, and I increase in decreasing rate as listed;  
phosphatases, peroxidase, and catalase show only a perceptible increase;  
and there is no increase in coenzyme A. A scheme for the cycles of  
coupled enzymic reactions is illustrated. The reactions between protein  
split products and oxidation products of polyphenols reduce the astringency  
of cacao products. The information of the transformations permits  
recognition that interactions may occur in cacao tannin formation and the  
course of the glyoxylic acid cycle. The data on coenzyme A support this  
assumption. 37 references.

L17 ANSWER 52 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1960:82509 Document No. 54:82509 Original Reference No. 54:15754b-d Enzymic  
changes in cacao beans during fermentation. I. Coupled reaction between  
enzymic pyrocatechol oxidation through cacao-polyphenoloxidase developed  
from primary oxidation products and proteins, **peptides** and  
**amino acids** derived from cacao protein. Purr, Arnulf;  
Springer, Rudolf; Morcinek, Hartmut (Univ. Munich, Germany). Zeitschrift  
fuer Lebensmittel-Untersuchung und -Forschung, 112, 40-6 (Unavailable)  
1960. CODEN: ZLUFAR. ISSN: 0044-3026.

AB The polyphenoloxidase (I) activity in ungerminated beans and amount of

activity increase at the same stage of germination was dependent on variety. The addition of individual **amino acids** and **peptides** after the first reaction stage (quinone formation) of I action with pyrocatechol (II) as substrate slightly promotes O uptake. On addition of the protein decomposition products, in the presence of L-proline there is marked O uptake, which is quant. related to variety. Among the **peptides** tested, glycylglycine exerts the strongest influence on O uptake, whereas there is no action in this respect with DL-leucylglycine. In general, among the **amino acids** released by cacao protein with decomposition, glyocol is associated with the highest O uptake, with a decreasing action in the following order: DL-threonine, DL-serine, L-alanine, L-lysine. D-Arginine, L-glutamic acid, and L-leucine were without influence.

L17 ANSWER 53 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1958:107116 Document No. 52:107116 Original Reference No. 52:18958b-d Artificial **chocolate** flavor. Rusoff, Irving I. (General Foods Corp.). US 2835590 19580520 (Unavailable). APPLICATION: US .

AB Artificial **chocolate** flavor is produced by treating a reducing saccharide with any glycyl or alanyl **peptide**. The flavor was enhanced by the addition of one or more **amino acids**. Thus, glycylglycine was mixed with dextrose in the ratio of 5:1, 30 weight % H2O was added to give a pasty consistency, and the mixture was heated at 130° for 8 min. on an oil bath to yield a product brown in color, friable, and soluble in water. Bitterness and astringency are incorporated into the flavor by the addition of alkaloids and tannins, resp. The alkaloids used are theobromine and caffeine. The astringencies are quebracho and chestnut tannins. The product is used as substitute for natural **chocolate** flavor or as a fortifier or extender.

L17 ANSWER 54 OF 54 CAPLUS COPYRIGHT 2005 ACS on STN

1958:26939 Document No. 52:26939 Original Reference No. 52:4886c-e Synthetic **chocolate**. Ruskin, Simon L. US 2816834 19571217 (Unavailable). APPLICATION: US .

AB Synthetic **chocolate** is prepared from mixts. of sucrose, fat, milk, starch, and a solution of casein hydrolyzate (I), methionine, furfuryl alc., lysine, and theobromine. A **chocolate** flavor is said to result from the combination of **amino acids** and alkaloids or other materials present in the mixts. Furfural derivs., especially (hydroxymethyl)furfural and mercaptofurfural, reinforce the flavor. It is claimed that small amts. of mercaptofurfural are produced by reaction of I containing methionine with furfuryl alc. and that (hydroxymethyl)furfural is produced by heating certain sugar components. A pooled hydrolyzate of soybeans, yeast, or meat, or a mixed hydrolyzate from food wastes, can be substituted for the I. The hydrolyzate should contain **peptides** having mol. wts. of 5000-10,000 since these **peptides** are responsible for the desirable color of the product. It is claimed that the product will be nonallergenic if the hydrolyzate is produced by acid or alkaline hydrolysis so that tryptophan is destroyed.

=> s keeney and (chocolate or cocoa)

28 KEENEY  
6547 CHOCOLATE  
7630 COCOA

L18 0 KEENEY AND (CHOCOLATE OR COCOA)

=> s phil(w)keeney

945 PHIL  
28 KEENEY

L19 0 PHIL(W)KEENEY



=> d his

(FILE 'HOME' ENTERED AT 11:50:37 ON 04 MAY 2005)

FILE 'FSTA' ENTERED AT 11:50:48 ON 04 MAY 2005

L1 10873 S COCOA OR CHOCOLATE  
L2 108 S L1 AND FLAVOR  
L3 42334 S FLAVOR OR FLAVOUR  
L4 1282 S L1 AND L3  
L5 7421 S PEPTIDE OR PEPTIDES  
L6 24 S L4 AND L5  
L7 711 S L3 AND L5  
L8 2 S L7 AND TRIFLUOROACETIC  
L9 96 S L7 AND HPLC

FILE 'CAPLUS' ENTERED AT 11:54:15 ON 04 MAY 2005

L10 12498 S COCOA OR CHOCOLATE  
L11 62835 S FLAVOR OR FLAVOUR  
L12 420867 S PEPTIDE OR PEPTIDES  
L13 39 S L10 AND L11 AND L12  
L14 143 S L10 AND L12  
L15 0 S L14 AND TRIFLUOROACETIC  
L16 10 S L14 AND HPLC  
L17 54 S L14 AND AMINO(W)ACIDS  
L18 0 S KEENEY AND (CHOCOLATE OR COCOA)  
L19 0 S PHIL(W)KEENEY

=> s l10 and sds

88329 SDS

L20 23 L10 AND SDS

=> d l20 cbib,ab 1-23

L20 ANSWER 1 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2005:163963 Identification and characterisation of the major aspartic proteinase activity in Theobroma cacao seeds. Guilloteau, Martine; Laloi, Maryse; Michaux, Stephan; Bucheli, Peter; McCarthy, James (Department of Plant Science, Nestle Research Centre, Tours, F-37097, Fr.). Journal of the Science of Food and Agriculture, 85(4), 549-562 (English) 2005. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB Theobroma cacao seeds contain an unusually high level of aspartic proteinase activity. Although this activity is central to the development of high-quality **cocoa** flavor, the Tcacao polypeptide responsible has not yet been definitively identified. Here we report the identification and characterization of an active protein complex from T cacao seeds with an apparent mol. weight of approx. 50 kDa. This active complex contains at least two polypeptides: an approx. 30.5 kDa aspartic proteinase, the product of the TcAP2 gene, and an associated polypeptide, the 20.5kDa trypsin inhibitor protein. The active complex co-eluted off a size exclusion column with another complex containing the trypsin inhibitor and a putative acid chitinase. The 30.5 kDa TcAP2 proteinase is apparently a monomeric aspartic proteinase with optimal activity between 42 and 47 °C and an optimal pH of 3.0. Significant inactivation of the TcAP2 activity occurs at acid pH around 47-52 °C, a temperature potentially obtained during **cocoa** bean fermentation **SDS**-PAGE anal. showed that the purified TcAP2 complex efficiently degrades the cacao seed storage protein vicilin into peptides smaller than 10 kDa. In addition, high-resolution size exclusion chromatog. showed that this proteinase is capable of degrading proteins into peptides as small as di- and tripeptides, indicating for the first time that the main T cacao seed aspartic proteinase can produce very small peptide products. Our results demonstrate that the aspartic proteinase encoded by the TcAP2 gene plays a critical role in the production of **cocoa** flavor precursor peptides during **cocoa** bean fermentation

L20 ANSWER 2 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2005:43094 Performance comparison of the BioSys optical assay and the violet red bile agar method for detecting coliforms in food products.

Firstenberg-Eden, Ruth; Foti, Debra; McDougal, Susan; Beck, Stephen (BioSys, Inc., Ann Arbor, MI, 48108, USA). Journal of Food Protection, 67(12), 2760-2766 (English) 2004. CODEN: JFPRDR. ISSN: 0362-028X. Publisher: International Association for Food Protection.

AB Coliform counts in a variety of foods, including dairy products (raw milk, pasteurized milk, yogurt, butter, and ice cream), meats (pork sausage, ground beef, and raw chicken), raw eggs, and **chocolate**, were performed by the rapid automated BioSys optical assay and the conventional method with violet red bile agar (VRBA). The standard deviation (SD) among five replicate counts for the optical assay was similar to or better than that obtained with VRBA plates for all foods tested. The average SD for all foods tested was 0.21 for the optical assay and 0.30 for the VRBA plates. At very low concns. of coliforms (1 to 10 CFU/mL for liquid products and 10 to 100 CFU/g for solid samples), the average **SDs** were 0.26 and 0.47, resp. The optical assay was less susceptible to interference by noncoliform organisms. In naturally contaminated samples, bacteria such as *Serratia liquefaciens*, *Pantoea* spp., *Vibrio fluvialis*, *Aeromonas hydrophilia*, and *Pseudomonas* spp. formed typical colonies in VRBA, resulting in false-pos. results or a need to verify colonies in brilliant green lactose broth. The optical assay appeared to be more selective than the VRBA conventional method, detecting fewer noncoliforms. There was close agreement in test results between the two methods, as indicated by correlation coeffs. of 0.92 to 0.99 obtained for the regression anal. of the two methods. In most cases both methods distinguished accurately between pos. samples containing coliforms and neg. controls. All products tested using the automated BioSys Optical Assay for coliforms yielded results more quickly (typically 10 to 12 h) than did those tested with the conventional VRBA method (24 to 72 h with confirmation).

L20 ANSWER 3 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2004:914367 Document No. 142:54953 Modified micellar electrokinetic chromatography in the analysis of catechins and xanthines in **chocolate**. Gotti, Roberto; Fiori, Jessica; Mancini, Francesca; Cavrini, Vanni (Dip. Scienze Farmaceutiche, Univ. Bologna, Bologna, I-40126, Italy). Electrophoresis, 25(18-19), 3282-3291 (English) 2004. CODEN: ELCTDN. ISSN: 0173-0835. Publisher: Wiley-VCH Verlag GmbH & Co. KGaA.

AB Modified micellar electrokinetic chromatog. (MEKC) anal. of monomeric flavanols (catechin and epicatechin) and methylxanthines (caffeine and theobromine) in **chocolate** and **cocoa** was performed by using sodium dodecyl sulfate (**SDS**) as a principal component of the running buffer. Because of the reported poor stability of catechins in alkaline solns., acidic conditions (pH 2.5) were chosen and consequently the electroosmotic flow (EOF) was significantly suppressed; this resulted in a fast anodic migration of the analytes partitioned into the **SDS** micelles. Under these conditions, variations of either pH value in acidic range or **SDS** concentration, showed to be not suitable to modulate the selectivity. To overcome this limit, use of additives to the **SDS**-based running buffer was successfully applied and 3 different systems were optimized for the separation of (+)-catechin, (-)-epicatechin, caffeine, and theobromine in **chocolate** and **cocoa** powder samples. In particular, two mixed micelle systems were applied; the 1st consisted of a mixture of **SDS** and 3-[(3-cholamidopropyl)dimethylammonio]-1-propanesulfonate (CHAPS) with a composition of 90 mM and 10 mM, resp.; the second was **SDS** and taurodeoxycholic acid sodium salt (TDC) with a composition of 70 and 30 mM, resp. A further MEKC approach was developed by addition of 10 mM hydroxypropyl- $\beta$ -cyclodextrin (HP- $\beta$ -CD) to the **SDS** solution (90 mM); it provided a useful cyclodextrin(CD)-modified MEKC. By applying the optimized conditions, different separation profiles of the

flavanols and methylxanthines were obtained showing interesting potential of these combined systems; their integrated application showed to be useful for the identification of the low level of (+)-catechin in certain real samples. The CD-MEKC approach was validated and applied to the determination

of catechins and methylxanthines in aqueous exts. from 4 different com. **chocolate** types (black and milk) and 2 **cocoa** powders.

L20 ANSWER 4 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2003:301508. Document No. 140:78846 Detersive efficacy of ecological formulations for removal of lipids and proteins in finished cotton fabric treated with various softeners. Carrion, F. J.; Serra, M. (Departamento de Ingenieria Textil y Papelera. Laboratorio de Tensioactivos y Detergencia, INTEXTER (U.P.C.), Spain). Boletin INTEXTER del Instituto de Investigacion Textil y Cooperacion Industrial, 121, 15-21 (Spanish) 2002. CODEN: BIIIEZ. ISSN: 1131-6756. Publisher: Universitat Politecnica de Catalunya, Instituto de Investigacion Textil y Cooperacion Industrial.

AB The detergency of an ecol. detergent formulation was evaluated in laundering of a soiled cotton fabric finished with Fixapret CPN, a finishing agent based on DMDHEU [dimethyloldihydroxyethylene urea] and treated with cationic softeners, such as quaternary ammonium silicones and esterquat. The detergent comprises anionic surfactant sodium dodecylsulfate (**SDS**), nonionic surfactant ethoxylated fatty alc. (Synperonic A-7), zeolites, Na<sub>2</sub>CO<sub>3</sub>, Na silicate, Na citrate, bleaching activator, and enzymes (Durazym, Termamyl, and Lipolase). The fabric was soiled with two proteins (egg and **cocoa** in milk) and an oily (olive oil and sunflower seed oil) residue. The complete detergent formulation was the most effective in removal of soilings from finished and treated fabric specimens; formulations lacking either enzymes or bleaching activator, showed poor detergency.

L20 ANSWER 5 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2002:355621 Document No. 137:92881 Analysis of vicilin (7S)-class globulin in **cocoa** cotyledons from various genetic origins. Amin, I.; Jinap, S.; Jamilah, B.; Harikrisna, K.; Biehl, B. (Faculty of Food Science and Biotechnology, Universiti Putra Malaysia, Serdang, 43400, Malay.). Journal of the Science of Food and Agriculture, 82(7), 728-732 (English) 2002. CODEN: JSFAAE. ISSN: 0022-5142. Publisher: John Wiley & Sons Ltd..

AB **Cocoa** cotyledons contain vicilin (7S)-class globulin (VCG), a major storage protein. It is the native source of oligopeptides and free amino acids which have been identified as precursors of **cocoa** specific aroma and are formed through proteolysis during fermentation. High-resolution electrophoresis of native proteins isolated from ripe, unfermented **cocoa** cotyledons harvested from different cultivars was used to determine genetic differences of the genotypes. Flavor differences have been reported to exist after standard fermentation in **cocoa** beans harvested from various genotypes. In this paper, **SDS**-PAGE and 2D IEF/**SDS**-PAGE polypeptide separation patterns are shown which were sep. isolated from cotyledons of various genetic origins. Cotyledons from three cultivars belonging to genetically distant varieties and a hybrid, Criollo, Forastero and Trinitario, did not reveal any anal. identity differences of VCG subunit polypeptide bands. Addnl., proteins of cotyledons harvested from three of those clones which were reported to produce genotype-specific flavor differences in raw **cocoa** after standard fermentation, SCA 12, UIT1 and PBC 140, when analyzed in the same way, did

not indicate differences. Thus, the cotyledon storage proteins from various genetically different **cocoa** trees are, within methodol. limits, the same. Aroma differences in raw **cocoa** harvested from various genotypes are the result of other genetic, physiol. or curing-related factors, but are not due to genetic differences of aroma precursors derived from storage proteins.

L20 ANSWER 6 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2002:287313 Document No. 136:397714 Characterization of a protease produced by a *Trichoderma harzianum* isolate which controls **cocoa** plant witches' broom disease. De Marco, Janice L.; Felix, Carlos Roberto (Departamento Biologia Celular, Universidade de Brasilia, Brasilia, 70910-900, Brazil). BMC Biochemistry [online computer file], 3, No pp. given (English) 2002. CODEN: BBMIB3. URL: <http://www.biomedcentral.com/content/pdf/1472-2091-3-3.pdf> Publisher: BioMed Central Ltd..

AB Several *Trichoderma* strains have been reported to be effective in controlling plant diseases, and the action of fungal hydrolytic enzymes has been considered as the main mechanism involved in the antagonistic process. However, although *Trichoderma* strains were found to impair development of *Crinipellis perniciosa*, the causal agent of **cocoa** plant witches' broom disease, no fungal strain is available for effective control of this disease. The authors have then undertaken a program of construction of hydrolytic enzyme-overproducing *Trichoderma* strains aiming improvement of the fungal antagonistic capacity. The protease of an indian *Trichoderma* isolate showing antagonistic activity against *C. perniciosa* was purified to homogeneity and characterized for its kinetic properties and action on the phytopathogen cell wall. A protease produced by the *Trichoderma harzianum* isolate 1051 was purified to homogeneity by precipitation with ammonium sulfate followed by hydrophobic chromatog. The

mol. mass of this protease as determined by SDS-PAGE was about 18.8 kDa. Its N-terminal amino acid sequence shares no homol. with any other protease. The purified enzyme substantially affected the cell wall of the phytopathogen *C. perniciosa*. Western-blotting anal. showed that the enzyme was present in the culture supernatant 24 h after the *Trichoderma* started to grow in casein-containing liquid medium. The capacity of the *Trichoderma harzianum* protease to hydrolyze the cell wall of *C. perniciosa* indicates that this enzyme may be actually involved in the antagonistic process between the two fungi. This fact strongly suggest that hydrolytic enzyme over-producing transgenic fungi may show superior biocontrol capacity.

L20 ANSWER 7 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2001:857976 Document No. 136:117662 Characterization of Peptides Formed during Fermentation of **Cocoa** Bean. Buyukpamukcu, Elif; Goodall, David M.; Hansen, Carl-Erik; Keely, Brendan J.; Kochhar, Sunil; Wille, Hans (Chemistry Department, University of York, Heslington, York, YO10 5DD, UK). Journal of Agricultural and Food Chemistry, 49(12), 5822-5827 (English) 2001. CODEN: JAFCAU. ISSN: 0021-8561. Publisher: American Chemical Society.

AB Anal. by SDS-PAGE and GPC-MS of fermented **cocoa** exts. shows changes in the amount and composition of the major proteins, accompanied by formation of complex distributions of peptides. MS/MS studies and application of SEQUEST sequencing software allowed identification of two related peptides, a hexapeptide and a nonapeptide, formed from vicilin, one of the **cocoa** storage proteins. Time course studies of the two peptides show different abundance profiles and indicate, in part, production of the hexapeptide from the nonapeptide.

L20 ANSWER 8 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2001:397665 Document No. 135:302983 Electrophoretic analysis to detect and quantify additional whey in milk and dairy beverages. Tala de Souza, Elizabeth Maria; Arruda, Sandra Fernandes; Brandao, Patricia Oliveira; Siqueira, Egle Machado de Almeida (Departamento de Biologia Celular, Universidade de Brasilia, Brasilia, CEP 70910.900, Brazil). Ciencia e Tecnologia de Alimentos, 20(3), 314-317 (English) 2000. CODEN: CTALDN. ISSN: 0101-2061. Publisher: Sociedade Brasileira de Ciencia e Tecnologia de Alimentos.

AB Polyacrylamide gel electrophoresis, SDS-PAGE system, was adjusted to detect the presence of addnl. whey in dairy beverages

distributed in a Brazilian Government School Meals Program. Aqueous solns. of samples in 8 M urea were submitted to a polyacrylamide gel gradient (10% to 18%). Gel scans from electrophoresis patterns of previously adulterated milk samples showed that caseins peak areas decreased while peak areas of  $\beta$ -lactoglobulin plus  $\alpha$ -lactalbumin increased as the percentage of raw milk powder replaced by whey powder increased. The relative densitometer areas of caseins or  $\beta$ -lactoglobulin plus  $\alpha$ -lactalbumin plotted against the percentage of whey added to the raw milk showed a linear correlation coefficient square higher than 0.97. The caseins plot was used to determine the percentage of addnl. whey in 116 dairy beverages, **chocolate** or coffee flavor. Considering that the lowest relative caseins concentration found in com. milk powder samples by the present method was 72%, the dairy beverages containing caseins percentages equal to or higher than this value were considered free of addnl. whey. Based on this criterion, about 49% of the coffee-flavor dairy beverages and 29% of the **chocolate**-flavor beverages, among all the samples analyzed were adulterated with whey protein to reach the total protein contents specified on their labels. The present method showed a sensitivity of 5% to addnl. whey.

L20 ANSWER 9 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2001:370434 Document No. 135:136550 Determination of the allergenicity of various hazelnut products by immunoblotting and enzyme allergosorbent test inhibition. Wigotzki, M.; Steinhart, H.; Paschke, A. (Institute of Biochemistry and Food Chemistry, University of Hamburg, Hamburg, D-20146, Germany). Journal of Chromatography, B: Biomedical Sciences and Applications, 756(1-2), 239-248 (English) 2001. CODEN: JCBBEP. ISSN: 0378-4347. Publisher: Elsevier Science B.V..

AB Although allergic reactions to hazelnuts are common especially in Europe, there are only a few investigations with regard to the influence of processing on the IgE-binding potency of hazelnut proteins. In this study the allergenicity of different hazelnut products, such as **chocolate**, nougat products, croquant or cookies, was examined by SDS -polyacrylamide gel electrophoresis, immunoblotting and enzyme allergosorbent test (EAST) inhibition expts. using sera of 17 hazelnut-allergic individuals. In only a few cases did the immunoblotting expts. yield pos. results as regards the allergenicity of the investigated products. By means of EAST inhibition, a residual IgE-binding potency could be detected in almost all of the product exts. Therefore, hazelnuts are a potential hazard to allergic people even as an ingredient of processed foods.

L20 ANSWER 10 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

2001:197070 Development and optimisation of immunochemical-based methods for the detection of hazelnut proteins in food products. Ben-Rejeb, Samy; Abbott, Michael; Davies, David; Cleroux, Chantal; Le Goffic, Francois (Food Research Division, Bureau of Chemical Safety, HPFB, Health Canada, Ottawa, ON, K1A 0L2, Can.). Abstracts of Papers, 221st ACS National Meeting, San Diego, CA, United States, April 1-5, 2001 AGRO-108 (English) 2001. CODEN: 69FZD4. Publisher: American Chemical Society.

AB Tree nuts such as hazelnuts constitute an important source of allergies, that have been implicated in serious reactions varying from urticaria to anaphylaxis, and even to possible fatalities. With the increasing use of hazelnut in the food industry, owing to their nutritive and taste values, it was important to have quality control methods allowing the identification of possible undeclared hazelnut in processed foods. A competitive enzyme immunoassay (ELISA) was developed to detect hazelnut. No cross-reactivity was observed when tested against 39 commodities, including many common allergens. Stds. at a spiking level lower than 0.5 ng/mL of proteins were clearly identified by the ELISA (IC80 of the competitive test). As **chocolate** products are the most likely to be affected by inadvertent contamination, an extraction and quantification method was developed and optimized for this type of matrix. No sample clean-up was required when exts. were diluted 1/10, overcoming any potential

matrix effect. Hazelnut was recovered at a yield of 88% to 93% when samples were spiked at levels varying from 1 to 10 ppm. The LOQ and LOD were determined to be resp. 0.5ppm and 0.25 ppm in **chocolate**. A confirmation technique was set-up using **SDS**-PAGE electrophoresis and western transfer. The developed methods were shown to be efficient in other matrixes of interest (i.e., cookies, cereal bars) and were also applied to a small survey allowing the identification of undeclared amts. of hazelnut in com. foods.

L20 ANSWER 11 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

1998:212339 Document No. 128:280913 Photosynthesis and associated metabolism during development of a *Theobroma cacao* hybrid with the lethal factor *Luteus-pa*. De Almeida, A. -A. F.; Valle, R. R.; Minar, P. Serrano (CEPLAC/CEPEC/SEFIS, Itabuna, 45600-000, Brazil). *Photosynthetica*, 35(1), 47-60 (English) 1998. CODEN: PHSYB5. ISSN: 0300-3604. Publisher: Institute of Experimental Botany, Academy of Sciences of the Czech Republic.

AB The recessive lethal character *Luteus-Pa*, expressed as a yellowing of leaves of young seedlings and followed by death approx. 60 d after emergence, presents a 3:1 segregation in crosses and/or selfpollinated plants. The fluorescence emission of chlorophyll (Chl), gas exchange, and chemical composition of normal and recessive homozygous *cacao* seedlings of the cross *Pa 121+Pa 169* were evaluated. The characteristics of Chl fluorescence kinetics were studied in stages B2, B3, C, D, and E of leaf development, corresponding to plant ages of 9 to 12, 13 to 15, 16 to 20, 21 to 30, and >30 d, resp. Gas exchanges were measured in mature leaves of both seedlings. In regular intervals of 3 d beginning at 33 d after emergence, the seedlings were separated into roots, stems, leaves, and cotyledons to determine the contents of saccharides (SAC) and free amino acids (FAA) and variation of the leaf Chl content. The Chl distribution in complexes of the photosynthetic apparatus was analyzed by **SDS**-PAGE in mature leaves of both normal and recessive 32-d-old seedlings. There were variations in Chl fluorescence, gas exchanges and chemical composition of different parts of both types of seedlings. However, no significant differences were found in the Chl distribution through photosynthetic complexes of 32-d-old normal and recessive homozygous seedlings. After that period a decrease in the Chl concentration was observed in the recessive seedlings, and only min. fluorescence (F0) was found. The F0 values were higher in the recessive seedlings than in the normal ones. The net photosynthetic rate of mature leaves was neg. in agreement with low conductance, transpiration rate, and high internal CO2 concentration. These factors might have contributed to a depletion in SAC in different plant parts. Although F0 partially reflects the Chl concentration in leaf tissue,

the

increase in its value was probably due to a damage in reaction centers of photosystem II. Therefore, the growth and development of recessive homozygous seedlings depended exclusively on cotyledon reserves, the depletion of which leads to death.

L20 ANSWER 12 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

1997:645868 Document No. 127:306641 Endopolygalacturonase secretion by *Kluyveromyces marxianus* and other **cocoa** pulp-degrading yeasts. Schwan, Rosane F.; Cooper, Richard M.; Wheals, Alan E. (School of Biology and Biochemistry, University of Bath, Bath, BA2 7AY, UK). *Enzyme and Microbial Technology*, 21(4), 234-244 (English) 1997. CODEN: EMTED2. ISSN: 0141-0229. Publisher: Elsevier.

AB Among 12 yeast strains isolated from **cocoa** fermns., only four showed extracellular pectinase activity. *Kluyveromyces marxianus* was the most pectinolytic, with 85% of total secreted protein consisting of a constitutive endopolygalacturonase (PG). No pectic lyases or methylesterases were produced. The pH and temperature optima for PG activity were 5.0 and 40°C, resp. Purified PG comprised four proteins of Mr 47, 41, 35, and 33 kDa based on gel filtration and 45, 42, 39, and 36 according to **SDS**-PAGE. Activity-stained, isoelec. focusing gels

showed three major bands (pI's 5.9, 5.6, and 5.3) and up to six minor bands from pI 6.4-5.0. PG had a typical random mode of action, very high macerating activity on plant tissues, and reduced the viscosity of **cocoa** pulp. PG secretion started in early exponential phase and was completed after 24 h. Only five out of 138 mutants with altered PG levels produced after nitrosoguanidine mutagenesis showed modest (up to 25%) increase in PG production. Most mutants were underproducers of the full complement of PG isoforms, including five which had high intracellular PG located in low-d. vesicles, vacuoles, and ER fractions. In most mutants, there was a clear correlation between PG and inulinase activity secreted from cells. The implications for both **cocoa** and enzyme production are discussed.

L20 ANSWER 13 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

1997:494262 Document No. 127:173673 Genotypic and phenotypic diversity within *Streptococcus anginosus*. Whiley, R. A.; Hall, L. M. C.; Hardie, J. M.; Beighton, D. (Department of Oral Microbiology, St. Bartholomew's and The Royal London School of Medicine and Dentistry, London, E1 2AD, UK). International Journal of Systematic Bacteriology, 47(3), 645-650 (English) 1997. CODEN: IJSBA8. ISSN: 0020-7713. Publisher: American Society for Microbiology.

AB *Streptococcus anginosus* is one of the three species currently included in the "anginosus group" of oral or viridans streptococci. In this study 21 strains of *S. anginosus* were examined to determine whether this species, as currently defined, is sufficiently heterogeneous to warrant further subdivision. Phenotypic strain characterization was carried out by performing biochem. tests with a com. system (Rapid ID32 STREP kit; bioMerieux), by performing tests to determine hyaluronidase production, hemolysis

on blood agar, and gliding motility on **chocolate** agar, by determining Lancefield groups, and by comparing whole-cell polypeptide patterns obtained by **SDS**-PAGE (**SDS**-PAGE). Variations in genotype were determined by studying 16S-23S rRNA intergenic spacer size polymorphisms by PCR amplification, by ribotyping, and by performing DNA-DNA base pairing studies. *S. anginosus* was found to be heterogeneous at both the species and intraspecies (subspecies) levels. Beta-hemolytic Lancefield group C strains that did not produce hyaluronidase formed a DNA homol. group that was sep. from the majority of the *S. anginosus* strains; the members of this group produced a 380-bp intergenic spacer PCR product, exhibited distinct ribotypes, produced an atypical **SDS**-PAGE pattern, and represented a previously undescribed species in the anginosus group. Two other strains (ATCC 9895 and 1007-77) remained ungrouped as determined by DNA-DNA hybridization and thus represented addnl. centers of variation at the species level. Hyaluronidase-producing, beta-hemolytic, Lancefield group C strains produced the same atypical **SDS**-PAGE pattern as beta-hemolytic Lancefield group C strains that did not produce hyaluronidase but differed from the latter organisms by producing a 600-bp intergenic spacer PCR product. In addition, both DNA homol. data and ribotyping data suggested that these strains comprise a subspecies of *S. anginosus*. With the notable exception of the beta-hemolytic Lancefield group C strains that did not produce hyaluronidase, strains ATCC 9895 and 1007-77, and the beta-hemolytic Lancefield group C hyaluronidase-producing strains mentioned above, the strains studied formed a closely related group within which some addnl. genotypic and phenotypic heterogeneity was observed. The latter group included both strains that fermented mannitol and strains that did not ferment mannitol, as well as strains that exhibited so-called gliding motility. Although no clear-cut division of these organisms was possible, our results indicate that strain NCTC 10713 may not be the most suitable type strain for *S. anginosus*. The authors concluded that *S. anginosus* strains exhibit sufficient heterogeneity to warrant division at both the species and subspecies levels, although insufficient nos. of strains belonging to the putative new taxa have been characterized to allow formal taxonomic proposals to be made.

L20 ANSWER 14 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

1997:429655 Document No. 127:47065  $\beta$ -fructofuranosidase from *Bacillus* and its use for fructosyl-saccharide preparation in commercial products. Nakada, Tetsuya; Chaen, Hiroto; Sugimoto, Toshiyuki (Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Japan). Eur. Pat. Appl. EP 780470 A2 19970625, 23 pp. DESIGNATED STATES: R: DE, FR, GB, IT. (English). CODEN: EPXXDW. APPLICATION: EP 1996-308698 19961202. PRIORITY: JP 1995-347543 19951218.

AB A  $\beta$ -fructofuranosidases is provided with a mol. weight of 49,000  $\pm$  5000 Da on SDS-PAGE, an isoelec. point of 4.6  $\pm$  0.5, an optimum pH of about 5.5-6.0, and an optimum temperature of about 50° in the presence of Ca<sup>2+</sup>. The enzyme is produced by fermentation of *Bacillus* sp. V230 (FERM BP-5054) cultured at pH 5-8 and 15-45° for 5-100 h. The enzyme acts on saccharides with a  $\beta$ -fructofuranosidic linkage and other substances including other saccharides, sugar alcs., and alcs. to produce fructosyl-transferred saccharides in a relatively high yield. The reaction of sucrose with various saccharides yields products such as lactosucrose, erlose, xylosylfructoside, fructosyltrehalose, isomaltosylfructoside, and galactosylfructoside. These products have applications as food products, cosmetics, and pharmaceuticals as a sweetener, taste-improving agent, stabilizer, growth-promoting agent for bifid bacteria, and a mineral absorption-promoting agent.

L20 ANSWER 15 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

1997:179164 Document No. 126:276568 Vicilin-class globulins and their degradation during cocoa fermentation. Amin, I.; Jinap, S.; Jamilah, B. (Fac. Food Sci. Biotechnol., Univ. Pertanian Malaysia, Selangor, 43400, Malay.). Food Chemistry, 59(1), 1-5 (English) 1997. CODEN: FOCHDJ. ISSN: 0308-8146. Publisher: Elsevier.

AB Cocoa beans were fermented for 144 h using shallow wooden boxes at ambient temperature. Two major polypeptides were found to be present in the storage protein and an albumin fraction. The storage protein comprises two vicilin fractions with mol. wts. of 47.1 and 39.2 kDa, and the albumin fraction has a mol. weight of 21.1 kDa. The degradation of vicilin fractions during the course of fermn was visually detected by SDS-PAGE. The albumin fraction was found to be the most resistant to proteolysis during fermentation. At the end of fermentation, the 39.2 kDa polypeptide was completely degraded but the 47.1 kDa polypeptide was still present at low intensity. The protein concns. of 47.1 and 39.2 kDa polypeptides decreased from 1.74 to 0.03  $\mu$ g and from 0.93 to 0.02  $\mu$ g, resp. The protein concentration of 46 and 46.5 kDa polypeptides increased from 0.06 to

0.34  $\mu$ g and from 0.03 to 0.23  $\mu$ g, resp. This could be due to the result of the degradation products of the 47.1 kDa polypeptide.

L20 ANSWER 16 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

1997:100049 Document No. 126:196543 Isolation and molecular characterization of four arginine/glutamate rich polypeptides from the seeds of sponge gourd (*Luffa cylindrica*). Ishihara, Hisashi; Sasagawa, Takahiro; Sakai, Ritsu; Nishikawa, Masateru; Kimura, Makoto; Funatsu, Gunki (Laboratory of Protein Chemistry and Engineering, Kyushu University, Fukuoka, 812-81, Japan). Bioscience, Biotechnology, and Biochemistry, 61(1), 168-170 (English) 1997. CODEN: BBBIEJ. ISSN: 0916-8451. Publisher: Japan Society for Bioscience, Biotechnology, and Agrochemistry.

AB Four arginine/glutamate rich polypeptides referred to as 5k-, 6.5k-, 12.5k-, and 14k-AGRPs were purified to homogeneity by gel filtration on Sephadex G-75 followed by CM-cellulose, butyl-Toyopearl 650M, and reverse-phase HPLC from the seed of sponge gourd (*Luffa cylindrica*). Tricine SDS-PAGE indicated that 5k- and 6.5k-AGRPs are single polypeptides, but 12.5k- and 14k-AGRPs consist of two polypeptide chains, which are linked by disulfide bond(s). The N-terminal amino acid sequences of four AGRPs were analyzed by a gas-phase sequencer, and the result indicated that they are distinct mols. Comparison of the sequences with those of proteins in the protein database demonstrates that 5k- and



6.5k-AGRP have a significant homol. with a basic peptide from pumpkin seeds and with **cocoa** seed vicilin, resp., and that 12.5k- and 14k-AGRP are related to 2 S seed storage proteins. Furthermore, it was assumed that the four AGRPs might occur in the protein bodies within cells of the seed.

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1996:659425 Document No. 125:296154 Cloning of cDNA for aminopeptidase of *Aspergillus oryzae* and its use in food industries. Kauppinen, Sakari; Si, Joan Qi; Spendler, Tina; Dambmann, Claus; Halkier, Torben; Oestergaard, Peter Rahbek (Novo Nordisk A/s, Den.). PCT Int. Appl. WO 9628542 A1 19960919, 74 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-DK104 19960315. PRIORITY: DK 1995-262 19950316.

AB Disclosed is a cDNA encoding aminopeptidase characterized as having exhibits pI 4.9 and mol. weight 35 kDa by **SDS**-PAGE. The enzyme can be used to remove bitterness from protein hydrolyzates and thus is useful in improving the taste of bakery products. Production of the aminopeptidase in transgenic filamentous fungi such as *Aspergillus oryzae* and *Schizosaccharomyces pombe* was also described. A bread flavor improving composition containing aminopeptase and other ingredients is claimed.

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1988:36382 Document No. 108:36382 Micellar liquid chromatography of adenosine in cacao. Kim, Yong Nam; Brown, Phyllis R. (Dep. Chem., Univ. Rhode Island, Kingston, RI, 02881, USA). Journal of Liquid Chromatography, 10(11), 2411-22 (English) 1987. CODEN: JLCHD8. ISSN: 0148-3919.

AB A rapid isocratic micellar HPLC procedure for the separation of adenosine from theobromine in **cocoa** powder was developed. The adenosine peak was identified by using the enzymic peak shift technique with adenosine deaminase (ADA). Separation was performed on a poly(vinyl alc.) (PVA) column with a mobile phase containing 0.012M **SDS** and 0.005M phosphate buffer (pH 11.5). Response was linear for 0.1-1  $\mu$ mol adenosine; the detection limit was 10 nmol. The sepns. obtained on a PVA column with the micellar mobile phase were compared to sepns. obtained on a C18 column with both isocratic and gradient elution.

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1986:155800 Document No. 104:155800 Effect of composition of suppository bases on the release of mefenamic acid. Piasecka, Hanna; Zakrzewski, Zdzislaw (Zakl. Farm. Stosowanej Inst. Nauki Lek, Akad. Med., Warsaw, Pol.). Farmacja Polska, 41(4), 208-10 (Polish) 1985. CODEN: FAPOA4. ISSN: 0014-8261.

AB A single-chamber glass apparatus (A. Kerckhoff and G. Huizing, 1976), dialysis tubing with pore diameter 23 Å, and 200 mL pH 7.85 phosphate buffer at 37° were used for determination of release rates of mefenamic acid (I) [61-68-7] from suppositories. Various suppository bases and their mixts. with surfactants were tested. The highest release rates of I were observed from suppository prepared from coa butter with 20% Tween 40 [9005-66-7] (5.88%/4 h) or from PEG 1500 [25322-68-3] with 10% **SDS** [151-21-3] (11.05%/4h).

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1985:559396 Document No. 103:159396 Acidification, proteolysis and flavor potential in fermenting **cocoa** beans. Biehl, Boele; Brunner, Ernst; Passern, Detlef; Quesnel, Victor C.; Adomako, Daniel (Bot. Inst., Tech. Univ. Carolo-Wilhelmina, Braunschweig, Fed. Rep. Ger.). Journal of the Science of Food and Agriculture, 36(7), 583-98 (English) 1985. CODEN: JSFAAE. ISSN: 0022-5142.

AB **Cocoa** ferms. in Ghana and Trinidad as well as anaerobic fermentation-like incubations of fresh **cocoa** beans in Germany were carried out under controlled conditions. Samples of beans were taken during the course of these treatments and detns. were made as to acidification (pH, HOAc content), proteolysis (free  $\alpha$ -amino N, peptide N and **SDS** electrophoresis of the protein peptides) and flavor potential (gas chromatog. of the highly volatile compds., in particular isopentanal [590-86-3] and organoleptic anal. after thin layer roasting). A pos. correlation between acidification, proteolysis and the development of flavor potential during anaerobic fermentation can be demonstrated in principle. However, the flavor potential is increased if the temperature rise is comparatively slow in both normal fermentation and laboratory

incubation. Strong acidification and high accumulation of amino acids and peptides were not essential for a good flavor potential. The isopentanal content was a useful indicator of the progress of normal fermentation in the tropics. These findings can be interpreted on the basis of earlier results about germination-like processes in the protein vacuoles, pre- and post-mortem subcellular structures and the special characteristics of HOAc diffusion. Conclusions which are relevant to the practice of **cocoa** fermentation are discussed in more detail.

L20 ANSWER 21 OF 23 CAPLUS COPYRIGHT 2005 ACS on STN

1979:573478 Document No. 91:173478 Detection and quantification of whey ingredients in milk **chocolate** using **SDS**-gel electrophoresis and high-performance liquid chromatography. Hemmati, P. F.; Keeney, P. G. (Dep. Food Sci., Pennsylvania State Univ., University Park, PA, 16802, USA). Journal of Food Science, 44(5), 1353-7 (English) 1979. CODEN: JFDSA. ISSN: 0022-1147.

AB Sodium dodecyl sulfate(**SDS**)-polyacrylamide disc gel electrophoresis and high performance liquid chromatog. (HPLC) were utilized for identification and quant. determination of whey powder replaced for whole milk

powder in **chocolate**. **SDS**-phosphate buffer allowed complete solubilization of casein and whey proteins in **chocolate**. Therefore, isolation and fractionation of protein components of **chocolate** prior to electrophoresis were not required. The proteins were stained with Coomassie Brilliant Blue R-250 after separation. In all **chocolate** products containing whey powder as a partial replacement for whole milk powder, casein and  $\beta$ -lactoglobulin ( $\beta$ -Lg) were completely resolved and yielded sizable peak areas upon densitometric measurement. Therefore, casein as the major milk protein and  $\beta$ -Lg as the principal protein in the whey protein fraction were chosen for quant. purposes. Peak area ratios (casein/ $\beta$ -Lg) for these proteins decreased as the percentage of whole milk powder replaced by whey powder increased, and the relation was essentially linear. The ratio (casein/ $\beta$ -Lg) was similar to that of the whole milk powder ingredient only in milk **chocolate** which did not contain whey. Lactose, determined by HPLC, increased linearly in **chocolate** products with increasing percentage of whole milk powder replacement by whey powder. Using casein as a measure of whole milk solids content, the amount of  $\beta$ -Lg and lactose not belonging to whole milk solids can be used to estimate the type and amount of whey ingredient present in milk **chocolate** of unknown composition

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1979:102253 Document No. 90:102253 Physiochemically designed fat compositions from tallow. (United States Dept. of Agriculture, USA). U. S. Pat. Appl. US 891956 19780804, 27 pp. Avail. NTIS. (English). CODEN: XAXXAV. APPLICATION: US 1978-891956 19780331.

AB Beef tallow is separated into 5 fractions by fractional crystallization. Two of the fractions are crystalline, 1 is a plastic solid, and 2 are liquid and they may be

incorporated into foods or used per se. For example, 1000 g tallow was added to 10 L Me<sub>2</sub>CO, the mixture was warmed to 40°, the solution allowed to cool to 25° during 16-20 h, the precipitate removed by vacuum filtration to yield fraction (1) 75 g. The filtrate was adjusted to a solvent ratio of 10:1, the solution cooled to 2° for 16-18 h, the precipitate collected as before, and the filtrate after removal of solvent was fraction (5). The 2-degrees precipitate was dissolved in Me<sub>2</sub>CO in solvent-sample, and ratio 20:1, crystallization carried out at 15° for 16-18 h, the precipitate removed; this was fraction (2), 75 g. The filtrate from this crystallization was adjusted to 15:1 solvent-sample ratio, crystallization allowed at 2° for 16-18 h, and the precipitate designated fraction (3), 200 g; the filtrate, after removal of the solvent, was fraction (4) 50 g. The main triglyceride type(s) of fraction (1) was **SDS**, of (2) SSS, of (3) were SSU and SUS, of (4) were SUU; USU, and UUU and of (5) were SUU, USU, and UUU, where S = saturated and U unsatd. fatty acid residue.

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 1978:474298 Document No. 89:74298 Detection and quantification of whey ingredients in milk **chocolate** using **SDS**-gel electrophoresis and high-pressure liquid chromatography. Hemmati-Garakani, Poursy Fatemeh (Pennsylvania State Univ., University Park, PA, USA). 114 pp. Avail. Univ. Microfilms Int., Order No. 7808370 From: Diss. Abstr. Int. B 1978, 38(12, Pt. 1), 5828-9 (English) 1977.  
 AB Unavailable

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COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
364.19	584.06

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE	TOTAL
ENTRY	SESSION
-90.52	-90.52

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SESSION WILL BE HELD FOR 60 MINUTES

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